The Builder.

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The Strength of Timber.

NO one who has examined a series of tests of timber, or who has compared the tests carried out on any variety of timber by different experimentalists, can have failed to be struck by the wide divergence in the strength of many of the specimens. It is this divergence which has rendered all attempts to ascertain the normal strength of timber more or less unsuccessful. The important investigations instituted by the U.S.A. Department of Agriculture (Forestry Division) have added much to our knowledge of the subject; but, unfortunately, they were abandoned while still incomplete. Nevertheless the published records of these investigations furnish the most trustworthy information which has yet been obtained, and as they are not so well known in this country as they deserve to be, they will be largely quoted in this article.

It has long been known that "green" timber is weaker than seasoned. Sixty years ago Hodgkinson made a few tests for the purpose of ascertaining the difference of crushing strength, but his experiments were not carried out with sufficient accuracy, nor on a sufficient number of specimens, to render the results of much use. The degree of moisture in the original specimens does not appear to have been ascertained, but we are told that they were "moderately dry," and that the specimens in the second series had been kept two months longer in a warm place. Baywood, mahogany, and pitch-pine showed no increase of strength; alder, ash, cedar, and white deal very little increase; while other woods showed increases varying up to more than 100 per cent.

Bauschinger's tests are more satisfactory, and go to prove that "green" pine timber may have less than half the compressive strength of dry, but that the difference is not so great for transverse stresses. The results of his compressive tests on Scotch pine (*i.e.*, red or yellow deal) are particularly instructive. Four pieces of timber were taken, and sections from these were cut and tested "green"; these contained on the average 59 per cent. of moisture calculated on the *dry* weight of the wood, or 37 per cent. calculated on the *wet* weight, and had a crushing strength of about 4,400 lbs. per square inch. Four tests were afterwards made on partly-seasoned sections, containing moisture equal to 17 per cent. of the *dry* weight, or 14·6 per cent. of the *wet* weight, the average crushing strength being 6,500 lbs. per square inch. Finally, four tests were made on thoroughly-seasoned sections, which contained 9 per cent. of moisture on the *dry* weight, or 8·2 per cent. on the *wet* weight; these had an average strength of 10,700 lbs. per square inch. In other words, the partly-seasoned wood was about half as strong again, and the thoroughly-seasoned wood about two-and-a-third times as strong, as the green wood.

The experiments carried out by Professor J. B. Johnson and Mr. Roth for the U.S.A. Division of Forestry are particularly valuable, on account of the number of tests which were made and the care with which the investigations were conducted. The tests of the four "Southern pines" will be briefly considered. These are the Cuban pine (*Pinus cubensis*), the Longleaf pine (*Pinus palustris*), the Loblolly pine (*Pinus taeda*), and the Shortleaf pine (*Pinus echinata*). These are known by a great many local names, but, speaking broadly, it may be said that they are classed as "yellow" pine in America, and as "pitch" pine in this country. The ratios of transverse and compressive strength are given in Table I. for four different degrees of moisture—namely, 33 per cent. ("green" timber), 20 per cent. ("half-dry"), 15 per cent. ("yard-dry"), and 10 per cent. ("room-dry"). On the average the strength of the timber is increased 46 per cent. by "ordinary good yard-seasoning," and 82 per cent. by "thorough seasoning in kiln or house." With regard to these tests, Mr. B. E. Fernow, Chief of the Division of Forestry, states that "large timbers require several years before even the yard-season condition is attained, but 2 in. and lighter material is generally not used with more than 15 per cent moisture."

TABLE I

Influence of Moisture on Strength of Southern Pines.

Nature of Stress.	Percentage of moisture calculated on "dry" weight	Relative Strength. Cuban.	Longleaf.	Loblolly.	Shortleaf.	Average.
	Per cent					
Bending....	33	100	100	100	100	100
	20	118	116	117	118	117
	15	142	142	138	134	139
	10	181	182	168	160	173
Crushing endwise	33	100	100	100	100	100
	20	132	122	128	122	126
	15	157	154	156	142	152
	10	184	205	206	168	191
Mean of both bending and crushing....	33	100	100	100	100	100
	20	125	119	122	120	122
	15	149	148	147	138	146
	10	182	194	187	164	182

The actual compressive strength in lbs. per square inch is shown graphically in fig. 1, and varies on the average from about 4,200 lbs. to 8,100 lbs. per square inch, according to the degree of moisture. The illustration is reproduced with slight alterations from one in Circular No. 12, United States Department of Agriculture (Division of Forestry), from which also the other particulars of the tests have been obtained.

The importance of moisture as a factor in the strength of timber can scarcely be overestimated. The results already recorded show clearly that little reliance can be placed on tests of timber, unless the amount of moisture has been carefully ascertained. The failure to determine this factor is one cause of the great discrepancy between the ultimate strengths recorded by different investigations. It also accounts in a great measure for the difference of strength

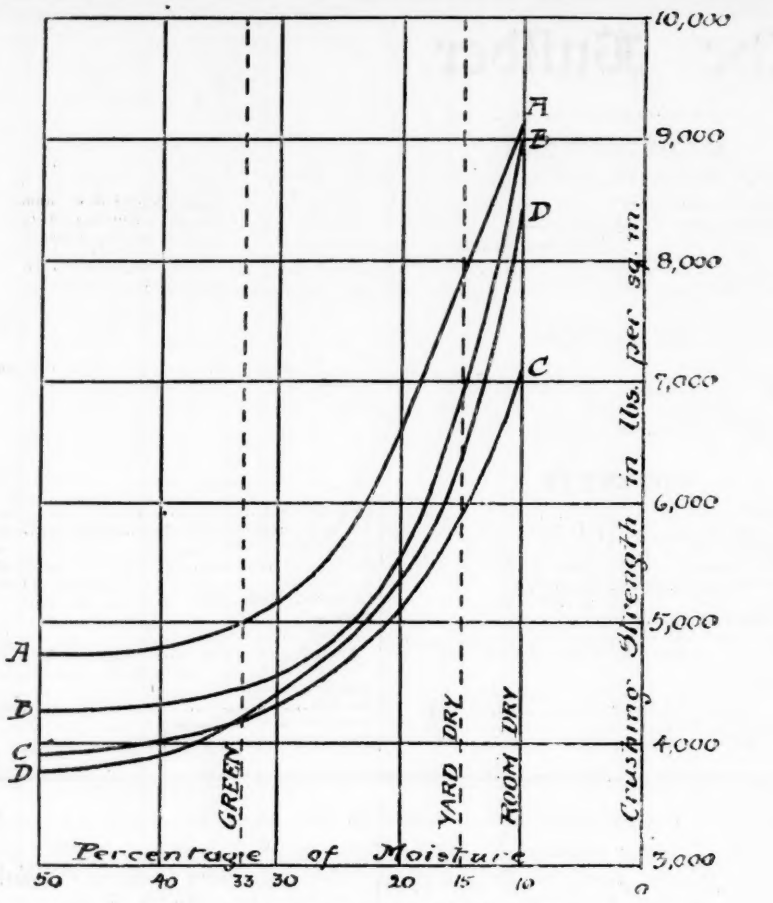


Fig. 1.—Crushing Strength of Southern Pines.

AA = Cuban. BB = Longleaf. CC = Shortleaf. DD = Loblolly.

observed between small test-pieces and large scantlings of the same timber. To be strictly comparable, all tests should be reduced to a common standard of moisture (say, 15 per cent.), and, until this is done, the investigation into the strength of timber will make little progress.

The specific gravity or weight of dry timber is another important factor of strength. It has long been known that, of timber of the same species, the heavier is generally the stronger, and recent experiments appear to indicate that this truth is of wider application. If this should prove to be the case, the subject of timber physics will be vastly simplified. Bauschinger's tests of pine, larch, spruce, and fir led him to the conclusion that the crushing strength of these timbers increases almost directly as the specific gravity, or, more exactly—

Crushing strength in lbs. per square inch = (13,800 × s.g.)—900.

American tests of "green" cypress, whose specific gravity varied from ·58 to ·35, showed a gradual diminution of strength from 6,500 lbs. to 2,900 lbs. per square inch under compression, and from 7,800 lbs. to 5,000 lbs. per square inch under a transverse stress.

The specific gravity or weight of the four Southern pines already described is a very accurate index of their transverse and compressive strength, but apparently the relationship between the specific gravity or weight and the tensile and shearing strength is not so intimate, at any rate as regards Cuban pine. We need not particularise these tests, but will briefly indicate the results obtained from a series of specimens specially tested for transverse strength and specific gravity. Taking the value of Cuban pine at 100 both for strength and specific gravity, we have, for Longleaf pine, strength = 91, s. g. = 94; for Loblolly pine, strength = 84, s. g. = 82; and for Shortleaf pine, strength = 77, and s. g. = 77. The relationship is remarkably exact throughout.

To ascertain the specific gravity of wood special apparatus is required, but a close approximation is in many cases possible by simple inspection or measurement. The greater the relative proportion of the dark summer-wood rings the greater will be (other things being equal) the specific gravity and the strength. Thus, among the southern pines, the dark rings have in good timber a specific gravity varying from ·9 to 1, while the light-coloured spring-wood rings have a specific gravity of about ·4 only. A log, therefore, in which the dark rings are one-third of the whole will have a specific gravity of ·56, calculated thus:—

$$(\tfrac{1}{3} \times \cdot 9) \times (\tfrac{2}{3} \times \cdot 4) = \cdot 56.$$

In the words of Mr. Fernow, "the relative amount of summer wood furnishes altogether the most delicate and accurate measure of these differences of weight as well as strength . . . . . especially since this relation is free from the disturbing influence of both resin and moisture contents of the wood, so conspicuous in weight determinations."

It follows from the facts just recorded that slowly-grown timber, with narrow annual rings, is not necessarily stronger than quickly-grown timber. The question is not so much one of the width of the annual rings as of the proportion between the light and dark parts of the rings; that is to say, between the spring wood and summer wood. As we shall see hereafter, the age of the tree has also a considerable influence on the strength of the wood.

While it is satisfactory to know that, other things being equal, the transverse and crushing strength of timber of the same species varies almost directly as the specific gravity, a still more important point for determination is whether the relationship between specific gravity and strength holds good for timbers of different species and genera. The results of tests of thirty-two different American woods, including pines, cedars, ash, oaks, hickories, &c., show clearly that there is an intimate relation between the two, but that assumption of the U.S. Division of Forestry—that the strength varies *directly* as the weight—does not appear to us to be borne out by the facts. If the transverse tests are plotted graphically, the theoretical line of strength, according to this assumption, will be a straight line, and this will divide the tests into two unequal groups, eight species being on one side of the theoretical line of strength, and twenty-four on the other. The following original formula, devised by the writer, gives a curved line of strength, which divides the woods into two equal groups, sixteen on each side of the line, and therefore accords much more closely with the tests:—

$$W = 5000 + 3{\cdot}8\, w^2,$$

where W = ultimate transverse strength in lbs. per square inch,

and w = weight of a cubic foot of "dry" wood in lbs.

It must not be forgotten, however, that, in the words of the Report, "these tests and weight determinations (especially the latter) were not carried on with that finesse which would be required for a scientific demonstration of a natural law," and that cross-grain, knots, moisture, and other conditions, may have affected the results in some cases more than others. The conclusions of the Division of Forestry are thus cautiously stated in circular No. 15:—"We can now extend the application of the law of relation between weight and strength a step farther, and state as an indication of our tests that probably, *in woods of uniform structure, strength increases with specific weight*, independently of species and genus distinction, *i.e., other things being equal, the heavier wood is the stronger.* We are at present inclined to state this important result with caution, only as a probability or indication."

We have seen that seasoned timber is much stronger than green, but the method of seasoning deserves consideration, as it may have considerable influence on the ultimate strength. Many experts are of opinion that natural seasoning gives the best results, but the time required is so long that more rapid methods are now indispensable. Drying in kilns is the process most generally adopted, and, if due care is exercised, appears to be perfectly satisfactory; on the other hand, if carried on too quickly, it may prove injurious, especially to hardwoods of complicated structure (such as oak), in which it produces a great amount of checking or cracking. Cuban pine in small scantlings (4 in. by 4 in.) has been found to have the same transverse and compressive strength when seasoned in warm air (about 100 deg. Fahr.), and when dried at temperatures varying from 150 deg. at the entrance of the kiln to 190 deg. at the exit. Higher temperatures, however, appear to be injurious. Scantlings of Longleaf pine, tested after drying at a temperature of over 300 deg. Fahr. and under a pressure of 150 lbs., were found to have the compressive strength reduced about 24 per cent. and the transverse strength no less than 37 per cent.

The soaking of wood by rafting or floating does not appear to have any injurious effect on the strength, provided that the wood is properly dried or seasoned before use.

The nature of the soil and climate has some effect on the strength of timber, but this effect is much more marked in some varieties than in others. Thus, Cuban and Longleaf pines appear to be very little affected by the locality in which they are grown, but the same cannot be said of other yellow pines. In the case of cypress, also, the difference in strength appears to be rather "a matter of individual variation than of soil or climate." Bauschinger found a marked difference in the compressive strength of whitewood or spruce from different localities, as shown in Table II., which is also interesting for the light it sheds on the influence which the date of felling has on the strength of timber. The tests three months after felling (columns No. 1) show that the winter-felled wood is much stronger than summer-felled, but this advantage is lost with thorough seasoning, as it is merely due to the fact that in winter there is less moisture in the wood than in summer. The tests of the seasoned wood (column No. 2) may be conveniently compared by averaging them, when (1) tested three months after felling; (2) tested five years after felling, it will be found that the average strength of the summer-felled timber is 6,114 lbs. per square inch, and of the winter-felled, 6,055. It may therefore be stated that the time of felling has no permanent influence on the strength of timber, but that summer-felled wood requires longer seasoning than winter-felled, as it contains more moisture.

Different parts of the same tree vary greatly in strength, as well as in specific gravity. In the case of longleaf pine it has been proved that the lightest, and therefore weakest, part of the stem of the tree is the pith and adjacent rings, representing the young sapling of less than fifteen or twenty years' growth. The maximum weight is grown between the ages of forty and sixty years. In other varieties of timber, the age of greatest weight and strength is different; thus, in Loblolly and Shortleaf pines, the maximum is reached between the ages of thirty and forty years. The sapwood of old trees is always weaker, but this is not due to the sap, but to the fact that in old age trees naturally produce lighter and therefore weaker wood. The weight and strength of the wood decrease from the butt or stump upwards; in Longleaf pine, wood cut from a tree at the height of 60 ft. from the ground was found to be nearly 25 per cent. weaker than wood cut from the stump.

Knots, cracks, and other defects of course affect the strength of timber very injuriously. Columns less than about 25 diameters in height, generally fail at knots, and not by direct crushing of the fibres. Even small "live" knots are injurious, but as these cannot be avoided in large scantlings, they must be accepted as an inherent defect of the material. No definite rule can be laid down as to the weakening effect of knots and other defects in a certain piece of timber; the architect must exercise his discretion as to whether the defects are so serious, considered in relation to the duty the timber has to perform, as to call for its rejection.

In conclusion, we will state briefly the most important lessons which this article is intended to convey. Timber for constructive purposes ought to be thoroughly seasoned, either naturally or at moderate temperatures; it ought to contain a large relative proportion of dark summer wood, and to be straight-grained, and as free as possible from large and "dead" knots, shakes, and other defects. The truth of the further lesson may also be assumed—that, other things being equal, heavier timber is almost invariably stronger than lighter timber, whether of the same species or genus or not.

TABLE II. (AFTER LANZA)

Bauschinger's Tests of Compressive Strength of Red Deal (Pinus Silvestris) and Whitewood (Picea Excelsa).

Time of Felling.	Red Deal from Lichtenhof.		Whitewood from Frankenhoren.		Regenhütte.		Schliersee.	
	1 lbs. per sq. in.	2 lbs. per sq. in.	1 lbs. per sq. in.	2 lbs. per sq. in.	1 lbs. per sq. in.	2 lbs. per sq. in.	1 lbs. per sq. in.	2 lbs. per sq. in.
Summer	5,214	7,183	4,507	6,416	5,319	6,287	3,143	4,570
Winter.....	6,784	6,343	5,618	6,756	5,348	6,343	4,238	4,779

NOTES.

The Housing Question. THE question of the housing of the working classes is certainly now taking a larger share of the public attention; but whether this will produce practical results remains to be seen. It calls forth, at any rate, various schemes. The latest is that of the versatile Lady Jeune, for which there is a good deal to be said. Her suggestion is that the Government should take the housing question out of the hands of the municipalities and make it an Imperial matter, placing it in the hands of a permanent Commission or similar body. There is a good deal to be said for this plan. It would enable the subject to be dealt with on larger and more consistent lines, and it would place the Imperial credit at the back of the Commission. On the other hand, it would inevitably tend still further to overburden the House of Commons, since every action of the Commission would be discussed in Parliament because, however capable the Commission might be, Parliament would be the final power with whom would lie the duty of supplying the necessary funds. But to every plan there must be objections, and we are inclined to think that Lady Jeune's idea is one which, if carried into effect, might to some degree enable this important subject to be coped with effectually.

Expenditure on Public Buildings. A PARLIAMENTARY paper issued on Monday last shows that the further sums required on the Civil Service list in connexion with public buildings, for the twelve months ending March 31, 1901, amount to 1,018,731*l.* Of that sum certain items are distributed thus:—Art and science buildings: British Museum (1,450*l.*), Natural History Museum (950*l.*), and Edinburgh Museum (100*l.*); for the adaptation of Hertford House, Manchester-square, for the Wallace Collection, 3,125*l.*, and of the buildings of the Imperial Institute for purposes of the London University, 9,960*l.*; and for works in respect of diplomatic and consular buildings in Vienna, Brussels, Lisbon, Cairo, and elsewhere, 2,000*l.* The total original net estimate for public buildings in Great Britain was 323,000*l.*; an additional sum of 35,200*l.* is now required. It is stated that the incidental expenses for the Wallace Collection are estimated at 4,275*l.*, since the preparation for opening the collection to the public involved a much greater expenditure than that at first provided for; and that the total original estimate for the Wallace Collection (8,967*l.*) should now be increased to the extent of 3,333*l.* Of the 5,000*l.* required for the Houses of Parliament buildings, 1,300*l.* represents the additional expenditure on the occasion of the recent opening of Parliament by the King and Queen in person.

Lighting the Embankment. ON Saturday afternoon Mr. Dickinson, the Chairman of the London County Council, opened the electric works at Charing Cross which are used for the lighting of the Victoria Embankment and Westminster Bridge. It will be remembered that twenty years ago the Victoria Embankment and Waterloo Bridge were lighted by Jablochkoff candles, but the constant breakdowns made the return to gas advisable. The County Council have been considering the question of returning to electric lighting ever since 1892, so they cannot be accused of acting with undue haste. The generating station is next door to the Charing Cross District Railway station, and is admirably adapted for its purpose. Four gas engines of 70 h.-p each drive four dynamos by means of cotton ropes. The pressure generated being 500 volts, the lamps are run in batches of ten in series. There are sixty-seven lamps on the parapet of the Embankment and there will be eighty on the kerbs and on Westminster Bridge. The latter lamps are double the candle-power of the former, but they are not so close together. The Council have, wisely in our opinion, made use of the old standards which were used to support the gas-lanterns, and the general effect of the lighting along the curved line of the Embankment wall is distinctly good. The arc-lamps are of the open type and have a high efficiency. They are double-carbon lamps, and the inventor claims that the parapet lamps will burn forty hours without retrimming. A special beaded kind of glass is used for the parapet lanterns which diffuses the light very successfully. We expect, however, that scrubbing and washing this glass will take up a good deal of the trimmers' time. From the electrical engineer's point of view, there is a good deal of the general arrangement of the station open to criticism. The total power generated is only some 300 h.-p., and yet nearly all the large floor space is taken up with gas engines and dynamos. If steam engines and direct driving were employed, there is room for machines that would develop ten times the power. Mr. Dickinson mentioned that gas was chosen so as to avoid the smoke and dirt

inseparable from steam driving. Still, steam being so much more economical, it would have been possible to use the best Welsh steam coal producing practically no smoke, and as for dirt, it is only necessary to inspect any well-managed corporation electricity works to see how easily engineers can overcome that difficulty.

Improvements in Columbia, U.S.A.

AN important step has been taken by the American Senate in the appointment of a Commission of Architects to consider the best means of furthering the architectural and æsthetic improvement of Washington, and of the district of Columbia State adjoining the capital. This movement was owing, in the first instance, to the initiative of the American Institute of Architects, who presented to Congress a Bill for the appointment of a Commission which should procure a general plan for the city of Washington, and determine the location of public buildings, ordering of landscape and statuary, and the extension of the park system in the district of Columbia. The result of this has been the adoption by the Senate of the United States of the following joint resolution :—

"*Resolved by the Senate and House of Representatives of the United States of America in Congress assembled,* That the President of the United States be, and he is hereby, authorised to appoint a Commission, to consist of two architects and one landscape architect eminent in their professions, who shall consider the subject of the location and grouping of public buildings and monuments to be erected in the District of Columbia and the development and improvement of the entire park system of said district, and shall report to Congress thereon the first Monday in December, nineteen hundred and one.

That to carry out the provisions of this resolution the sum of ten thousand dollars be, and the same is hereby, appropriated, out of any money in the Treasury not otherwise appropriated, to be expended under the direction of the President."

In another issue we will give the interesting summary of what may be called the æsthetic history of Washington and its neighbourhood, drawn up by Mr. Glenn Brown, the Secretary of the American Institute of Architects.

Lifting a Stone Building.

As an example of what can be done in the direction of underpinning, the alteration recently made to a two-story masonry structure in Illinois, is decidedly worthy of attention. The building, used as a County Court-house, covers an area of nearly 10,000 square feet, the walls are about 60 ft. high, and the roof is surmounted by a heavy dome. For the purpose of forming a new lower story, the entire structure was raised bodily by more than 12 ft. The mode of operation seems to have been particularly simple, and was as follows :—Rectangular holes at short intervals were cut through all the outer and two cross walls, about 3 ft. above the ground level. Two or three 15-in. steel I-beams were then inserted in each hole, the ends being supported on 12-inch square timbers parallel with the walls, and the timbers in turn were set on 10-ton screw-jacks resting upon two 12-in. square sills. By the aid of a large gang of men the jacks were screwed up gradually until the whole building had been lifted 6 in., when the load was transferred to timber beams placed on each side of the walls, these beams being shored up whilst cribwork was built beneath the jacks so that the next lift might be made. When the structure had been raised 2 ft., the old foundations were taken away, and a third crib was added and continuously built up as the work progressed. Finally the centre crib was removed and in its place new foundations were formed, and new walls were carried up to the old work. Each front of the building includes a massive portico, having four stone columns, each weighing about 50 tons. These porticos were raised together with the main walls by using longer steel beams at the necessary points. It is said that the work was successfully accomplished without cracking the masonry or causing any other structural injury.

Corrosion of Soft Steel and Wrought Iron.

Mr. F. H. WILLIAMS, of Pennsylvania, has recently published the results of some corrosion experiments made with pieces of soft steel containing respectively, 0·078, 0·145, and 0·263 per cent. of copper. The steel without copper was found to lose 1·85 per cent. of its weight under the conditions of the experiment, while the pieces containing copper lost only 0·89, 0·75, and 0·74 per cent. in weight. Some experiments with wrought iron showed that the addition of 0·393 per cent. of copper to the iron materially reduced its rate of corrosion. Further information with regard to the effect of the presence of small quantities of copper upon other properties of the iron and steel would be of interest.

The School for the Indigent Blind, St. George's-circus, S.E.

IT is stated that the sale of the site and buildings of the Schools for the Indigent Blind, in Southwark, has just been completed. The amount of the purchase-money, 140,000*l.*, was agreed upon after consultation between Mr. Reginald Roumieu, as surveyor to the charitable foundation, and Mr. Leslie R. Vigers, as surveyor on behalf of the Baker-street and Waterloo Railway Company, who have scheduled the site of the school for purposes of an electricity-generating station for the extension of their authorised line from Waterloo Station to the Elephant and Castle, at Newington, where a terminus will be constructed, at an estimated cost of 9,000*l.*, with subways communicating with the stations of the City and South London and the (old) London, Chatham, and Dover railways. The Blind School was first established near the Dog and Duck in St. George's Fields in 1799; thirteen years afterwards the premises were taken for the building of Bethlehem Hospital, and the Governors obtained a fresh site opposite the Obelisk. In 1834-8 the school buildings were enlarged and remodelled after the plans and designs of John Newman (*obiit* 1859). Messrs. Roumieu & Aitchison were appointed in 1897 Honorary Architects and Surveyors to the Corporation, who will erect new schools at Leatherhead, Surrey.

Bushey Park.

THE Commissioners of H.M. Works and Public Buildings are about to erect a building in Bushey Park for the purposes of the National Physical Laboratory as a department of the establishment at Kew. Shortly before her death Queen Victoria signified her sanction to the assignment of a lease of Bushey House, together with 30 acres of surrounding grounds, for the carrying on of physical and scientifical research by the Royal Society, and the Government agreed to increase the building grant by 2,000*l.* for necessary alterations of the house, which the Duke of Clarence, as Ranger of the park, occupied during many years before he succeeded to the throne as William IV. It had formerly been the residence of Lord North. The park, which extends over 1,100 acres, contains near the lodge some fine old oak and thorn trees, and is described by Norden in his account of Hampton Court, *temp.* James I. The famous avenues of chestnut trees, nine in number, were planted by King William III., who removed from the Palace grounds to the pond the fountain popularly known as "the Diana fountain," which in the inventory of 1659 is described as "one large brasses (*sic*) Statue on the top of the Fountaine called Arethusa." The statue, by the way, holds a gilded apple, and as Mr. Ernest Law suggests in his work upon Hampton Court Palace, may be intended for Venus. The single gate at the Teddington entrance was replaced three years ago with two gates separated by an iron pier, and for a length of about 50 ft. an iron railing was substituted for the high wall. Last June was unveiled the memorial, in terra-cotta, which Mr. Buckmaster, of Ashleigh, Hampton Wick, set up in honour of Timothy Bennet, the shoemaker of Hampton Wick who, at his own charges, successfully resisted the closing, about 150 years ago, by Lord Halifax of the footpaths across the park to all persons other than ticket-holders; that obstruction, which existed in the time of Charles I. and Cromwell, had been removed by Charles II. shortly after the Restoration. Home Park (about 750 acres) and Bushey Park formed part of the 2,000 acres acquired by Cardinal Wolsey when, in 1514, he took a lease for ninety-nine years at 50*l.* per annum of the Preceptory, with its "manor-house" (Hampton Court), of the Knights Hospitaller of St. John of Jerusalem, to whom, in 1211, the manor had been devised by Joan, widow of Sir Robert Gray.

LETTER FROM PARIS.

THE jury appointed to judge the "Concours de Maisons," or the annual competition for the medals and awards to be given to the architects and owners of the most artistic houses erected at Paris during the past two years, has now been completed by the adherence of the two members elected by the builders of the fifty-nine houses taking part in the second competition. The two new members are MM. Vaudremer and Nénot. The jury is now composed of four architects, MM. Bouvard, Sauger, Nénot, and Vaudremer, and five Municipal Councillors, with M. Bouvard as Chairman. The jury will commence operations this week. Twelve medals will be awarded, and the owners of the premiated houses will benefit by a reduction of half of the building taxes.

The Académie des Beaux-Arts has decided that in future the competitions for the annual Prix de Rome shall be anonymous ; the names of the competing students and those of their professors shall no longer, as has been the custom until now, be marked on the plans and drawings. This decision has caused much dissatisfaction amongst the students. The public exhibition of the drawings will, however, take place as usual for three days before the visit of the jury.

The Higher Committee of the Ecole des Beaux-Arts has decided to add a new clause to the general rules of the Ecole concerning the awards to students of foreign birth, a decision which is the cause of considerable emotion in the section of architecture, where foreign students are numerous. The new article, No. 105, runs in substance as follows :—

"Foreign students — male or female — cannot

claim the awards of sums of money coming from the various foundations of the schools, or connected with the medals awarded for the school competitions. In the cases where the jury designates a foreign student as winner of an award consisting of a medal, prize, and sum of money, the foreign student will be declared winner of the honorary award, viz., the diploma and the medal, but not the monetary reward, which shall be reserved. The jury will then decide whether the work of a French student in the same competition is worthy of an award, and in that case the money award will be given to the latter. In the contrary case the sum of money will be reserved and divided between two French students, winners of the same competition in the following year."

The subject for the annual competition in decorative architectural design, called "Concours Rougevin," was an episcopal throne, and was competed for by 186 students of the first class. The awards were made on the day following the application of the above new rule regarding foreign students, and the winner of the first medal, second prize—Mr. Brown, an American student—was the first foreigner to whom the new rule was applied. The first medal, with a money prize of 24*l.*, was awarded to M. Cret, pupil of M. Pascal, the second medal being awarded to Mr. Brown, pupil of M. Laloux; but the money prize, of a value of 16*l.*, was awarded to M. Roy, winner of the third medal.

The organising Committee of the next Salon of the "Société des Artistes Français" (Old Salon) has elected MM. Pascal, Scellier de Gisors, and Courtois-Suffit as delegates for the section of architecture. The exhibits of drawings of architecture, &c., should be delivered at the Grand Palais des Beaux-Arts from April 1 to 5 next. The two Salons—Old and New—will both hold their exhibition at the Grand Palais des Beaux-Arts, the first from April 22, the second from May 1, and both to June 30, 1901. The New Salon has modified its rules to the effect that foreigners shall no longer form portion of the jury, and that members of the society shall be limited to five exhibits only. The Old Salon admits two exhibits only from each member, but each exhibit may include several drawings in one frame, and the jury reserves the right of excluding any drawing which may not be considered absolutely necessary for the proper comprehension of the whole exhibit. The public will now have to pay a separate entrance fee to each Salon instead of (as has been the case at the recent Salons) one entrance fee for visiting the two Salons.

The city of Paris has just acquired for the sum of 1,600*l.* the remarkable high-relief "Frise des Travailleurs," which decorated the entrance to the Porte Monumentale of the Exhibition. It is proposed to place this frieze in the new museum at Montmartre, but it would appear to be much better in place as a backing to some circular sward in the Cours la Reine. The frieze is due to the talent of the young sculptor, M. Anatole Guillot, and the skill of M. Emile Muller, ceramist.

The Commission des Programmes at the Ecole des Beaux-Arts gave "A Building for National Assemblies at New York" as the subject for the competition called "Prix de Reconnaissance des Architectes Américains." The building was to comprise a large assembly hall, capable of containing 4,000 people, for national assemblies and for the Presidential elections, and was to contain an important tribune at the end of the hall for the speakers; six large rooms for committee meetings, with private rooms for sub-committees and the chairmen; a large hall for the archives, a large library, and all the necessary dependences; an immense waiting hall preceded by vestibules for the accommodation of a large concourse of people; refreshment and correspondence rooms, reading-rooms and press-rooms, post, telegraph, and telephone offices, and an important signal tower. A connexion is to be made with the Metropolitan Railway by means of wide staircases and lifts. The employment of brick in the construction was recommended as being the material largely in use at New York. Stone and rich marble from Europe should also largely enter into the design, and as the funds (due to the donation of a rich person) were unlimited, nothing should be spared as regards the sumptuosity of the exterior and interior of the building and the employment of architectural and sculptural orders. The longest dimension of the available ground was 630 ft., the scale of the elevations was to be to 125th full size. As no prize was awarded last year, two equal prizes were given this time for the best plans and designs for this building, for which the programme was truly Prix de Rome, and these two were carried off by M. Charles Duval, pupil of M. Pascal, and M. Hulot, pupil of M. Marcel Lambert.

The efforts of the Parisian archæologists and some of the members of the Commission du Vieux Paris concerning the preservation of the old residence called "Résidence de la Reine Blanche," in the Rue des Gobelins, of which mention was made in the last letter, have met with success. The Government has given orders for complete measured plans of the old building, which M. Jules Geoffrey, Director of the Manufacture Nationale des Gobelins, proposes to add to the present manufactory and instal therein an interesting museum of Gobelin's work. The Commission du Vieux Paris has named M. André Hallays, editor of the *Journal des Débats*, and M. Henri Lavedan, the dramatic author, as members of the Commission in place of the late Dr. Lamoureux and M. Jules Perrin.

M. Nénot, the architect of the New Sorbonne, has been appointed "Commandeur" in the Legion of Honour.

The new building of the Cour des Comptes which will replace that which existed on the embankment opposite the Tuileries and was burnt down during the Revolution of 1870 is very interesting as an example of the employment of armed cement in the construction of a building destined to contain important documents and archives, and for that reason necessarily as fireproof as possible. The architect, M. Moyeux, has constructed the staircases, vaults, floors, and all the interior portion entirely of armed cement, including the immense number of cupboards, shelves, and pigeon-holes for storing the archives, the whole of the latter being painted with a metallic white enamel paint called Silexore, which will preserve the surface and at the same time keep the interior bright and light.

The new lines of the Metropolitan Railway, viz, those of the Palais Royal (Place du Danube), Auteuil (Opéra), and Bastille (Place de la République) are now being put in hand.

The interesting old church of Montmartre, one of the oldest of Parisian churches, has been saved from destruction, and is now in the hands of MM. Sauvageot and Boutré, architects, for complete restoration. This old church, of which the chapel was consecrated in 1147 by Pope Eugéne III., is to be carefully restored and made complete, a large portion of the oldest remains of the building have been discovered, and sufficient data of the old tower which fell several hundred years ago has been found to facilitate the restoration and reconstruction. The magnificent marble columns which supported the dome, and which were brought over by the Roman legions, have been discovered surrounded by a thick coating of cement and plaster. The work will occupy about two years and will cost 12,000*l.*

The well-known Pavillon de Hanovre, an interesting specimen of eighteenth century French architecture, at the corner of the Rue de la Michodière, will not be saved from the demolisher's hands despite all efforts which have been made. The pavilion will be pulled down and its place occupied by a large building for the offices of the United States Mutual Life Assurance Company.

The leases have been signed handing over the building of the Bourse by the Town of Paris to the company which is about to undertake the work of restoring the present building and the important additions to be made on either side.

The three new Parisian hospitals destined for sick children, and to replace the old Trousseau Hospital, will be inaugurated early in April. The first situated in the Rue Etex, and called Hôpital Bretonneau, will contain 234 beds; the second, in the Rue Michel-Bizot, called new Hôpital Trousseau, will contain 237 beds; the third, on the Place du Danube, called Hôpital Hérod, will contain 221 beds.

M. Rodin, the sculptor, has accepted the presidency of a new literary and artistic society, which professes as its object to promote the artistic education of the people by teaching them to understand the union of the beautiful with the useful in life. With this object, and under the patronage of the author of the too celebrated statue of Balzac, provincial centres are to be formed by groups of artists carefully selected, who are to organise lectures and exhibitions intended to refine the popular taste, and to direct it towards an æsthetic ideal, formulated by M. Rodin. We have not much faith in the results of this mission, which seems likely to share the fate of the new Académie des Beaux-Arts, which M. Gérôme has endeavoured to found, but which has come to nothing. This eminent artist had obtained promises of support from members of both Salons, but they seem suddenly to have reflected that the new society would injure the existing Salon, and have all begun to excuse themselves from acting, more especially as the first condition was that they should resign membership of the Salons.

The sister of Courbet, the late painter, has been desirous to organise in some municipal building a permanent exhibition of several pictures which her brother had left to her, and which she proposes to present to the municipality. The Hôtel Lauzun has been spoken of as the place for this exhibition. The pictures might be an interesting possession for the city of Paris, but they would be very much out of place in the Hôtel de Lauzun. Courbet was a realistic painter of pictures sombre in colour and often incorrect in drawing, and the refined decorations of the Hôtel Lauzun, a building eminently aristocratic in its associations, would form a very unsuitable frame for them. The Hôtel de Lauzun itself will be one of most interesting artistic curiosities in Paris, if the intention is carried out of collecting here, in their original surroundings, the furniture, tapestries, and objects of art and luxury belonging to the aristocratic residence of a "Grand Seigneur" of the seventeenth century. But Courbet, the Communist painter, would be sadly out of place there.

At the Bibliothèque Nationale the arrangement of the new buildings is in progress, in which, towards the autumn of this year, the collection of engravings and medals will be installed. The new wing, which has been a year in building and has cost 400,000 francs, is just finished; and M. Pascal, the architect, will shortly commence another addition, intended to contain a reading-room lighted by electricity, and which will be open in the evenings. Little by little the Bibliothèque, which has been left so many years in an unsatisfactory condition, will in the end be entirely rebuilt; but as it is a question of voting money, and Parliament has shown itself very parsimonious, the whole work will probably not be finished for four or five years.

M. Noël, who has been commissioned to execute the architectural part of the monument to Balzac, has designed a pedestal on very plain lines, but which will harmonise with the façade of the Palais Royal, in front of which the work of Falguière is to be placed.* It is probable that the monument will be completed for inauguration on May 16, which is the anniversary of Balzac's birthday. The monument to Victor Hugo, the model of which has been executed by M. Barrias, is at present being cast at the Barbedienne Foundry.

The Luxembourg Museum is at present closed for various re-arrangements in view of the return of the works lent for the great Exhibition, and for the placing of the new works required by the State. In the meantime M. Bénédite, the curator, has organised in a special gallery an exhibition of the works of Rosa Bonheur, which will have great interest for the artistic world.

The exhibition of the "Union de Femmes peintres et sculpteurs" is being held in some of the galleries of the large Art Palace in the Champs Elysées. The Duchesse d'Uzès is now the president of this association. The exhibition includes 967 pictures, and thirty-five pieces of sculpture, which are arranged on the first floor of the building next the Avenue d'Antin. There are very few original or interesting works. Among the landscapes we may mention the "Champs Elysées" of Madame Nancy Adam; a view of Angoulême by Madame Lenoy; and the "Église de Saint Martin," by Mdlle. Boulian. Among the portraits, Mdlle. Madeleine Carpentier shows really fine qualities of composition and drawing. The pastels by Mdme. Vallet-Bisson, and the translucent enamels by Mdme. Montigny, are also worthy of note.

We have to record the death, at the age of sixty-three, of the poet Armand Silvestre, who was also an art critic of great taste and knowledge, and who filled with distinction the office of Inspecteur des Beaux-Arts to the Department of Public Instruction.

Paris has lost a well-known architect in the

* The statue is illustrated in the *Builder* of June 10, 1899.

person of M. Ernest Brunnarius, Officier d'Académie, who was killed last week in the catastrophe brought about by the avalanche at Mount Mirantin. Born at Paris in 1857, he became pupil of M. Coquart at the Ecole des Beaux-Arts, carried off two medals at the Salons of 1888 and 1889, and was architect of several buildings at Paris in which he showed a great originality of ideas and design. One of his last works was the Protestant Orphanage for Girls at Puteaux, a building which on account of its excellent arrangement of plan and the simplicity of its style may be considered as one of the types of this kind of establishment.

STAPLETON NEW INFIRMARY COMPETITION.

THE designs for the infirmary which the Bristol Guardians propose to erect at Stapleton, near Bristol, were on view the whole of last week at the ancient St. Peter's Hospital. Fourteen architects were invited to compete, the assessor being Mr. Keith D. Young, and seven designs were eventually received, all of which exhibited knowledge of the subject and were above the average.

The site is situate near the city, with Stapleton Church and the river Frome on the west. It will be reached by a new road from Blackberry Hill, which upon the opposite side bounds the grounds of the lunatic asylum, having the workhouse to the north-east. A careful model of the site, prepared by Mr. W. S. Skinner, was on view in the room.

The first premiated is design *E.*, by Mr. H. Percy Adams, London. The building fronts to the south, and consists of coupled pavilions of sick wards to accommodate 852 patients, three of which are upon the west side and two on the east, leaving space for the extension of another pair, the administration block in the middle, the whole bisected by a horizontal corridor. Above this block and with an intervening space are the laundries and machinery, &c., and higher still on the site, parted by a brick fence wall about 60 ft. distant, is placed the isolation hospital with its offices and adjuncts in three small blocks on a terrace. These have been arranged for double pavilions of six beds each, with a small detached block between, containing doctor and nurses' rooms, wash-house, &c. Above these buildings is placed the mortuary, while at the north-east corner of the site have been located the lodge and receiving block, which latter is arranged with double wards for eight of either sex, with the usual adjuncts, besides waiting-room, attendants' room, &c. The first floor has been allocated to patients' clothes store, arranged in bays, with shelves all round; three additional storerooms and a bedroom are also provided.

The pavilions of the infirmary are connected by the long arterial corridor before mentioned, which is 10 ft. wide, arcaded on the ground floor, enclosed with windows on the first story, and having open sides on the topmost floor under a covered roof. The ward pavilions are also connected at either extreme end by iron balconies that lead one to the other, but afford no direct access to the ground from the top, excepting by the one principal staircase at either end of central corridor. This has been suitably and properly arranged and isolated from adjacent wards. An unenclosed patients' lift is placed in the well of stairs, and the nurses' water-closet and scrubbers' room and movable bath are also conveniently located here. There are four children's wards, respectively two of thirteen beds and two of twelve beds, divided by a glazed screen in each case. The end of each long ward so treated has a cross ventilating passage right across, giving access to the balcony, and the space so enclosed provides the sanitary adjuncts, as placed elsewhere in towers, of water-closets, sink and bathroom. The male and female wards are planned on the principle of one window to every two beds, excepting in the wards for lying-in women and offensive cases of either sex, where the arrangement is one bed to two windows, but in all cases there are no windows provided at either end.

The bathrooms are not in the sanitary towers, which latter are very much cramped in planning, two water-closets, sinkroom, and lavatory, including a lobby, being arranged in a space of about 15 ft. square.

The administrative department occupies the heart of the lay-out, and is admirably arranged. This measures about 280 ft. from top to bottom, by 160 ft. across. The lower half, with the exception of a few projections, is lighted from one side. The entrance-hall and offices are at the bottom, to the right the medical officers' apartments, to the left the nurses' dining and recreation rooms. The upper part of this court is occupied by the chapel, lighted on one side and seating 250; this is approached from two corridors by a vaulted vestibule. The upper part of the block on the ground floor is taken up by the kitchen and steward's department, which is economically arranged. Two stories over, the topmost being partly in the roof, are devoted to the sleeping quarters of the whole establishment, lighted on one side, properly separated, and provided with escape doors.

The entire block plan is the most unencumbered of any shown. The elevations are treated in a broad and pleasing manner, and the drawings, which cover fifteen strainers, are vigorously executed; there is a complete absence of figured dimensions on the drawings.

The second premium has been awarded to design *A.*, by Messrs. Giles, Gough, & Trollope. Naturally this does not materially differ from the others excepting in the planning of the administrative department and the arrangement of the sanitary towers, which, although they include the baths, are more spacious. A full and carefully detailed block plan gives an excellent idea of the whole proposal, and fire-escape stairs are provided.

The planning of the isolation and receiving block is more fully treated than in the selected design, the patients' clothes store being on the ground floor, which is a good point. The administrative block is, however, somewhat crowded. The chapel, standing in the front court, has four accesses, with the dispensary behind and the operation room over. An element of importance and of institutional character has been given to the elevations, and it is unnecessary to say that the whole of the drawings have been clearly and carefully shown.

Design *B.*, by Mr. Arthur Marshall, of Nottingham, to which the third premium has been awarded, is a very attractive set of drawings, and the problem is illustrated in an able and pleasing manner. The general arrangement of the administrative block is, however, unlike designs *E.* and *A.*, in that it is recessed in the middle, with large projecting wings on either side, and a fine central feature of a tower. The wards have curved ends, and the details show a full knowledge of the subject. The sanitary towers are not, however, effectively isolated from the wards, and although the plans have many points of considerable merit, they do not as a whole, apparently, seem to completely provide the accommodation exhibited by the other premiated designs. A general sketch elevation is shown of the whole frontage, and the whole of the drawings exhibit much ability.

Design *G.*, by Mr. C. W. Bevis, of Southsea, has a well-disposed administration block and good open courts. The isolation block is placed at the north-west corner of site at an obtuse angle to the other buildings. The chapel is separated from the general buildings, and the mortuary is placed near the entrance lodge. A good arrangement is shown connecting the bathroom with the sanitary tower and ward by a triangular lobby. No ward has been arranged with one bed to two windows. The elevations are simply treated with hipped roofs.

Design *F.*, by Messrs. Newman & Newman (London), shows much knowledge of the subject, but it has several defects in detail which are evident after a careful inspection, although there is not much manifest deviation in the main lines. There is, however, some extravagance of space shown in the long flats, 5 ft. to 6 ft. wide, over the administrative department, although the blocks are well broken up; further consideration would probably have produced more economy. The isolation of the principal stairs, nurses' water-closet, &c., in the ward pavilions seems to be indispensable, and cupboard and store accommodation is very short. The day rooms are provided at the end of the wards.

In design *D.*, by Mr. H. C. M. Hirst (Bristol), the wards also have their day rooms at the end of wards, which are made conspicuous features, and the baths are placed in towers corresponding to the sanitary towers. The isolation blocks are planned in an unusual way, the two wards forming an ⌋, with the nurses' room in the angle. The elevations are utilitarian in character.

In design *C.*, Mr. Henry Williams (Bristol), places his entrance from the city at the lower part of the site, and the receiving wards are tacked on to the main building at the axial corridor. The plan is arranged with three pavilions on the left of the administration block and two on the right, all four floors in height. The planning of the administration department is somewhat involved; the chapel is on the second floor in front, and is made a prominent feature in the elevation; the disposition of the buildings is well shown on the ground. The grounds are well laid out, tennis courts being provided, also shelters and conveniences for both sexes.

ROYAL INSTITUTE OF BRITISH ARCHITECTS:

ADDRESS TO STUDENTS.

AN ordinary general meeting of this Institute was held on Monday evening last at No. 9, Conduit-street, Regent-street, W., Mr. Wm. Emerson, President, in the chair.

The minutes of the last meeting having been taken as read,

Mr. W. J. Lock, secretary, read the following "Address to Students," prepared by the President, whose voice did not permit him to read the address:—

"In the few words I have the pleasure to address to my younger friends—I will not say to the students, for in our profession we must all be students to the last days of our lives, but to the junior members of the profession—I will endeavour to lead you to some higher planes of thought in relation to the practice of the art of architecture, rather than to mere practical business elements material to success. I presume, of course, that those of you who have taken the trouble to pass our examinations and become members of this Institute, have in your minds the idea of practising in the profession. That is to say, I presume your intentions are those of actual performance of an architect's duties in the designing and carrying out of building operations, as opposed to mere theory, the function of the professor. I will therefore consider some few of the things involved in this word practice, the objects, aims, and points in connexion therewith, that should be weighed by one undertaking such responsibilities.

There is a right use or proper employment of architecture. I need hardly point out that building is the most necessary of all sciences; in its objects it subserves the highest and the lowliest wants of humanity. It provides fitting tabernacles for the worship of the Creator, suitable courts for the administration of governments and justice, appropriate palaces for the great and dwellings for the poor; it supplies institutions for the education of all classes in all branches of learning, for the amelioration of the diseased, the poor, and the mentally afflicted, and every kind of commercial establishment; also all other forms of edifices to meet the complex requirements of the world: all these in their aggregation evolve cities, towns, and villages. It is a science, but the love of beauty inherent in our natures makes us demand that it be more—that it be an art as well—and this side of it is architecture, and, if good, unites with it all arts. It is therefore of the highest universal importance that those practising it, on whose skill and taste its proper employment is dependent, should be so educated as to plan for use, to design with appropriate beauty, and to construct with scientific knowledge.

To this end I pointed out last year how a thorough education, not only in architecture itself, but on a wide and comprehensive basis, is essential; and this education should not only be gained by study of man's work in the arts and sciences, but also by study of God's work in nature. There should be besides an inquisitive, diligent searching into the reasons of things. The constant use of our faculties in effort with application and judgment is essential, and our highest duty. Idleness will not compass proficiency. As Shakespeare says in 'Hamlet':—

> 'He that made us with such large discourse,
> Looking before and after, gave us not
> That capability and godlike reason
> To rust in us unused.'

Architecture should be more than mere building in the best material and manner; the thought and needs of the time must be ex-

pressed. It does not suffice to satisfy the one only who has conceived it, but should be capable of pleasing all people in all times. Such a true expression of the architect's mind—

> 'Like the unchanging sun
> Clears and improves whate'er it shines upon:
> It gilds all objects, but it alters none.'

It is the divine element in man materialised in his works: his two natures, the human and the spiritual, are evidenced in his individual conceptions.

In real architecture there must be not merely the individual bias or personality exhibited by one's particular devices, peculiarities, or the excellences of one's draughtsmanship, but there must be the expression in all sincerity of spiritual sentiment also. Ralph Waldo Emerson says :—

> 'The hand that rounded Peter's dome
> And groined the aisles of Christian Rome
> Wrought in a sad sincerity;
> Himself from God he could not free.
> He builded better than he knew,
> The conscious stone to beauty grew.'

That is what I take to be the meaning of the proverb, 'Ars est celare artem.' The artist's material personality or mechanical dexterity should not be predominant so much as the spiritual or divine influence inspiring him. If such be our aim, we shall rightly use any powers of architectural design with which we may be endowed, and be enabled to express the highest mind that is in us by the forms of which draughtsmanship will convey the conventional rendering. This habit of mind, combined with constant practice, care, and accuracy, will lead to dexterity of expression of feeling which is essential.

But more than habit of mind for fitting expression in our art is necessary for successful practice. There should be habit of method in study, and attention to apparently trifling details, and in business conduct. For as to study it has been well said :

> 'If not to some peculiar end designed,
> Study's the specious trifling of the mind.'

As to the details and little points that constantly arise, if there is not the methodical habit of carefully looking into them, things seemingly insignificant are easily overlooked, resulting in endless trouble to both the client and the architect. In regard to habits of method in business, I believe that the men with methodical habits usually get through infinitely more work, and do it better and quicker, than those lacking in this respect. Methodical habits tend to avoidance of worry, for an architect's life consists, to a large extent, of attention to details of all kinds, which should all have methodical attention in turn. And there is nothing so prejudicial to artistic effort as worry. It should be avoided in every way: a quiet and restful mind is essential to the right exercise of thought and creative power. Moreover, to worry at all is bad, and a correct feeling of what life is, and its inseparability from difficulties and troubles, should prevent our giving way to it. A nature so disposed frequently troubles itself over evils that never arise; it shows lack of faith, for

> 'Deep in man sits fast his fate
> To mould his fortunes, mean or great.'

Therefore the architect whose soul is in his art should strive by methodical habits and rules of business to render himself as impervious as possible to worry. Rules no doubt are irksome, and perhaps especially so to the artistic temperament; but without method or rule one is apt to be slovenly. One good rule is to encourage a habit of work every day, and this—however disinclined one may feel, and however little in the humour—with the effort to work the imagination will fire. It may be said the artist cannot work without the inspiration; but he can go on waiting so long for the inspired feeling that it may never come. An architect has this advantage in his life, that effort in the same groove does not recur each day; the variety of the claims upon his attention is one charm of his work. Cultivate earnestly methodical habits. I speak with some reason, for I was never brought up with these habits, and have learned the great necessity of them, particularly to the architect.

The importance in practice of study with thoroughness in both the theoretical and practical sides cannot be too strongly inculcated. There have been articles in some of the papers lately pointing out how, if England is to retain her position in trade and power, the highest intellectual education is necessary in all modern businesses. Not merely smartness or push is wanted, but intellect thoroughly trained, and of a type in which it is stated this country is woefully deficient. It is said that our business men are simply amateurish and incompetent compared with the newer type of highly educated Germans and Americans.

If it be true that in trade this highly trained intellect is so essential, in how much greater degree must it be so for the profession of architecture! For beyond the mere business element, without which, to a certain extent, it is impossible for the architect to practise successfully, there is the necessity for a thorough knowledge of art, with much of many other subjects, such as science, history, &c., combined with the study necessary for the acquirement of that dexterity without which he cannot express his ideas. How superior the educational methods in regard to architecture are in America to those in this country has lately been shown in our 'Journal' in a most able manner by Mr. Arthur Cates.

Therefore a serious reflection for the young student in this country is how very much his education must depend upon himself and his own exertions if his work is to be more than that of an amateur and have vital force, and if he wishes to succeed by his power and competency rather than by smartness and push, or playing off upon the public the eccentricities of fashions of the moment. The days of mere building by architects in this country are, we hope, fast passing away; and this century the public will demand, not only that the architect be versed in all practical details of his calling, but that, by really cultivated taste and intellect, he may build with power, beauty and perfect utilitarianism.

But by those who wish to excel as artists time must be allowed for the study of Nature. The delicate tones of colour in the trees and herbage and sky, the perfection in drawing and beauty of colour in details of leaves, flowers, fruit, animals, birds, insects, &c., and the forms of fishes are lessons in decoration which should be learned at first hand. Deductions and inspirations innumerable may be gathered from them, with a freshness no study at second hand from man's work can give. Burges used constantly to make his pupils draw all sorts of flowers and insects and colour them, as well as study from the life in his office. Emerson says: 'In every landscape the point of astonishment is the meeting of the sky and the earth, and that is seen from the first hillock as well as from the top of the Alleghanies.' And what a truth is here! It is in the meeting of the heaven and the earth, the spiritual and the material, that art is rendered capable of conveying sentiment and lessons.

The study of Nature, no matter under what aspect, puts some germ of life, some sentiment, into the spirit of the artist, whether he be an architect, sculptor, painter, poet, or musician. Inconsistencies or vulgar eccentricities are never found in Nature, though infinite wonders are discoverable to the observant mind; and in its study one may learn all beauties of proportion, form, and colour. Therefore, cultivate habits of study and reading, as Bacon said, 'not to contradict or believe, but to weigh and consider.'

Higher education is absolutely necessary if the status of the architect is to be raised. It should be remembered that doctors and barristers are almost always University men; and it will be well to bear in mind that the sooner it becomes the rule, rather than the exception, for architects to receive a higher, or perhaps a University education, the sooner will the acknowledged status of the profession be elevated.

Then for facility of practice the architect should cultivate his memory; and as all cannot perform feats of memory, a practice of writing down useful information should form another habit. The architect in designing not only requires to remember details of old and other work, as a guide, incentive, or restraint to his own, but he must recollect endless details of construction and many specialities for building purposes necessary in modern structures; and this is no trivial matter. But, above all, he must remember the effect certain proportions, details, and compositions have given, in isolation or when in juxtaposition in former examples, ancient or modern. He will thus be enabled to reject or improve the crude, and profit by the excellent. Masters in our art have followed the teaching of many old examples, and they have felt it necessary to reject others. Originality of design is not shown by the utilisation of forms which better and more cultivated men than ourselves have seen good reason to discard. An educated perceptive faculty and a good memory are necessary to realise the full teaching of past times.

There is also, in connexion with the practice of the art of architecture, such a word as proportion; and the value and meaning of this word may easily be lost sight of. To the architect's mind may probably immediately be suggested the comparative relation of one architectural detail to another and to the whole composition. But besides the objective symmetry and harmonic degree of form or size, proportion may be considered by the architect in other ways. Of course, proportion in this sense is the very first essential of fine architecture. It should be an inherent faculty in the architect and artist, but it may be cultivated.

It is by the proportions as much as—or even more than—by the beauty of detail that the mind is impressed by works like the Parthenon, the Pantheon, Westminster Abbey, Chartres Cathedral, the 'Mercury' by Praxiteles, the 'Venus di Milo,' Michelangelo's 'Moses,' or Cellini's 'Perseus,' or by the delicate refinement of the proportion of scale and relief in the decoration of the Villa Madama. And proportion must descend, also, to the smallest details. The perfection of Cellini's goldsmith's work is as much in its proportion and as important to its excellence as his wonderfully finished detail. The same applies to Etruscan goldwork and the best Indian works. Proportion in colour is also a most important factor in the excellence of artistic work.

The study of nature is the guide as to how much of any one colour will harmonise with another. How often is work spoiled by the introduction of too much colour or by its tone—by the coldness or excess of blue, or the foxiness of too much red, or the unpleasantness of a superabundance of yellow! Such faults never occur in nature. The general tones of nature, whether brilliant, as in the East, or sombre, as is often the case here, are always in perfect harmonic proportion; so also are the details of brilliant colour in birds, insects, and flowers. It should be noticed that it is only in details like these that brilliant spots of colour are found in nature. The Owen Jones prize is given as an incentive to study of colour in reference to architecture. It might well include in the students' works studies from nature.

It seems a pity that a greater proportion of colour cannot be effectively introduced in the buildings of our towns, which are usually so fearsome in their sombre dulness. But there can be no doubt much colour in buildings requires a bright sunshine, as in Greece, Egypt, and India, to give it its true value. Nevertheless, I think we might be a little more cheerful in our streets with some advantage.

There is also a proportion in architectural work, which requires to be maintained, between coarseness and refinement. This is a very subtle point in all good work. Too much refinement in architectural work tends to weakness of effect, and deprives it of its masculinity. At the other extreme, 'muscular' architecture, as it was termed when the reaction from the Late Perpendicular of the early part of the century set in, and a phase of Early French architecture was the fashion, may degenerate into coarseness. It is the carefully balanced proportion between these that avoids either extreme. The effect of all the finest architecture has been attained by a combination of strength and power with refinement of well-proportioned and beautiful detail.

Too much care cannot be bestowed on the proportion that sculptured and other decorations bear, first, to the whole composition, and, secondly, to each other. They either give scale or destroy it. They either adorn it or make it appear tawdry. In all this the architect's should be the guiding spirit, however much may be done by the craftsman or sculptor.

Then there is the proportion that the worship of one's art should bear to one's life. It is often said, as if it were the greatest praise, 'He lives solely for his art.' I doubt if this could be said of any truly great man. It is too circumscribing and belittling. The larger the environment the greater the sphere of usefulness in life; and so long as the time occupied in other affairs is not out of pro-

portion to the valuable hours necessary to one's life's work, mingling with others and doing work in other ways enlarges the mind, is our moral duty, and should benefit our art.

Success is an object of life, but need not involve a want of sympathy with others, nor pushing on self, regardless of their claims, nor flinging on one side all other considerations on the road. Success in the practice of an architect, as in other callings, should be aided by a proportionate feeling sympathetic with a life full of effort and enthusiasm.

Nevertheless, success in the art of architecture should be the settled purpose of him who proposes to practise, and that to the fullest extent, 'in proportion to his being a human being, living his life amongst his fellow-creatures, to whom he can impart or derive something. The aim of culture is to make us better company as men and women in the world.' The greatest men, like Michel-angelo, Donatello, Cellini, and Goethe, were all men of other affairs besides their art, and were in sympathy with their surroundings of thought, work, and politics. To quote Ralph Waldo Emerson again, 'However much of real power is found in solitude and in silent moments, a proportion must also be developed by exchange of thought and ideas in mingling with sympathetic interest with our fellow-men.'

There is also a proportion that should be observed between the ideal and the sentimental. The one is the spiritual in our art, the other the simply sensuous.

Æstheticism, another American writer says, is not 'the vital force inherent in the idealist; much of what in our architectural art of to-day seems to satisfy the casual and thoughtless is devoid of the life and spirit of art. The one is the appreciator and creator of all noble forms of art, the other is at home among the ginger-jar style of decorative effect.' 'It is the idealist who will, with a strong faith in the spirit that is in him and with energy of purpose, strike out for himself fresh achievements. He may fail, but he is ready to take the risk, and has the courage of his opinions. To the æsthete a lower plane of work altogether, a pretty tone of colour or eccentric form, a delicate curve or a sentimental line of poetry, devoid of the spiritual essence of the ideal but pleasing to the fancy, will afford infinite satisfaction.'

So there should be proper proportion maintained between artistic sentiment and practical purpose. The man who sacrifices the purpose to the art is not a useful member of the community. While he who sacrifices his art altogether to utility does not elevate the community. It is the correct judgment weighing the proportionate values of the one and the other which makes the architect.

It has been said the aim of the ancient philosophies was to raise man above common notions of happiness, an endeavour to crush his humanity and develop his divinity, to make him happy by refinement of mind and soul and by the ignoring of his material pleasures—meaning, I suppose, if this be a true rendering, complete self-denial, not so much for the benefit of humanity at large as for the individual's own exaltation. The Baconian philosophy which marked the beginning of the great strides in science and utilitarianism that have taken place during the last century was very different. It taught that nothing can be beneath our attention that may minister to the physical or material benefit of mankind. The first was grand, but scarcely attainable, or alone desirable for our human natures; the second was attainable and useful to man as he is. So the art part of architecture, the soul of it, a most potent factor in mental pleasure, is for the satisfaction of the divine side of humanity; but alone, it does not altogether satisfy the requirements of humanity; the utilitarian side of architecture is also most necessary for the satisfaction of our physical needs. The needs of both soul and body must be fulfilled in good work, and are equally worthy of the highest efforts of our intellects and imaginations. In architecture it is the hopeful spirit of the men of imagination coupled with practical common sense, a level brain, and a cultivated taste that is wanted to weigh well the boundaries of the respective values of a practical idealism and a maudlin sentimentalism.

Then there is the necessity for a proper proportion being maintained between work and rest. There is such a thing as staleness. The want of recreation makes a man dull, unfit for companionship or sympathetic mingling with or interest in his fellows; and his work suffers in consequence. Also there must be margin for reflection and thought. Great achievements usually germinate in quiet moments. An overworked brain and no physical activity or recreation must have a bad result both on a man's work and his life. So time should be proportioned that there is leisure both for light reading, the study of nature, and for recreation; then there will be freshness and vigour in your work; and if you always aim above your mark, and remember that what you do should not only be for your own personal satisfaction, but for that of others and for future generations, your restful moments may benefit the world.

Then of much importance in connexion with the practice of the architect, as in all other businesses in life, there is another thing that must be borne in mind, and that is right principle. This in architecture will mean an avoidance of shams and false construction, which somehow always manage to look wrong, even though worked on such a grand scale as the external walls of St. Paul's, or the impudent ugliness of our shops with stone façades, apparently standing on nothing. Truth makes work look consistent and correct; lack of it offends good taste. Palatial decorations in offices, ecclesiastical embellishments in restaurants, the affectation of a cottage simplicity in a palace, or *vice versâ*, imply a want of appreciation of the fitness of things, and are wrong in principle; and this element of truthful principle in architectural art should be carried down to the smallest detail, if the work is to live.

Then there should be right principle in your motive of action; and this is a most important point, if you desire not only your personal position to be respected by others, but also wish to uphold the dignity and status of your profession generally. Professional respect must ever depend on the character, conduct, and aims of the units in the profession. Each individual has his own particular influence on the appreciation with which his profession as a whole is viewed by the public. Dubious transactions entered into for the sake of emolument, a too great regard for personal advantage, or a disregard of the interests of others, tend to acts lowering to the profession. On this ground I would recommend due consideration before entering into competitions. See at least that the conditions are not derogatory to the dignity of a great profession, and see that they are fair as much in your competitor's as your own interests; and let no unworthy thoughts of possible interest or influence induce an activity which in the long run not only must be disadvantageous to you personally, but also detrimental to the profession as a body.

The highest principles of morality should be the guide in professional practice, not only in regard to art, but also in all dealings with employers, contractors, tradesmen, craftsmen, and others with whom business relations bring you in contact. Work cannot be obtained without employers, nor carried out without tradesmen and labour of all sorts, and your success is bound up with these; therefore it is to your interest to treat all with a high-minded, unsparing sympathy. The architect should, on principle, enrich his mind and render himself proficient in all branches of his work, as his duty to his clients, and should deal fairly and avoid harshness in dealing with those over whom he is set as supervisor.

A high principle in these directions would avoid much of the litigation and many of the unsatisfactory arbitrations so constantly arising. It wants a kindly spirit united to a firm will—the iron hand in the velvet glove—to perform all an architect's duties in the highest manner, and to render himself and his profession honoured and respected by the public and those with whom he has business. Always remember the words—

> 'Thy credit wary keep, 'tis quickly gone,
> Being got by many actions, lost by one,'

and our reputations are the immortal part of ourselves.

Principle also should not only lead you to strive after success in your own practice, which is, of course, your high duty to yourself, but also to aim at helping others who may have less experience or knowledge than you have, and thus assist in elevating your profession. With this view you cannot interest yourselves too much in the work of this Institute, whose objects are to encourage the art of architecture, to uphold the interests of the profession, and improve its status. This obligation will be best served by a large-minded way of looking at all sides of thought, and by cultivating broadness of views in our art of architecture, with a proper consideration for the sentiments of others, and not by the pushing forward of any particular school or clique.

In combination we are strong; separated we are comparatively weak. There is room in this Institute for all architects who are capable and honest in their views and endeavours, and the wider the circle of thought it enfolds, the greater the sphere of its influence will be, and the more it will foster education and dispel ignorance, and maintain the reasonable humility that should distinguish all those who claim to be artists; for, as Prior says:—

> 'By ignorance is pride increased:
> They most assume who know the least.''

Mr. J. A. Gotch, F.S.A., then read a criticism of the designs and drawings recently submitted for the prizes and studentships. Mr. Gotch, in the course of his remarks, said that the Pugin Studentship was perhaps the most fascinating of all the prizes offered by the Institute; "for it is earned, not by laborious plodding in a dull office, not by a consideration of dreary formulas, or a study of the wants of man in his various capacities as the user of a club, or a stroller in a park, or a foot-passenger desirous of crossing a stream, but in delightful journeys from one village to another, either in our own richly-endowed land

> 'Or by the lazy Scheldt or wandering Po'—

journeys in which every sketch has its own memory—the quiet of a country church, the gloom of a castle guard-room, the rain pattering on lead roofs, the sun drawing shadows across lichen-covered walls, amid the scent of old-fashioned flowers and the hum of the distant reaper. That is how the Pugin is earned, and it is spent in a more systematic prolongation of the same delights. Yet, after all, the Pugin is only a means to an end. Its object is not merely to make young men facile sketchers, but to lead them, through the observation of the work of the men of old, to do their own better."

In referring to the Soane Medallion, he said: "This great increase in the number of designs submitted is very gratifying; we may conclude that it indicates among students an increasing interest in their work. Whether it also implies an increasing slackness of work in the respective offices to which they are attached I do not know. We may also say that with the increase of numbers the number of fairly good designs has proportionately increased. It is not merely the fringe that is longer, but the garment itself. At the same time, so far as the Soane is concerned, the increase has not produced the master-hand; and this competition must be pronounced disappointing on the whole. It is no secret that the reason which led the Council to withhold the medal was the absence of a really good plan; and it is of the utmost importance to impress upon young designers the vital necessity of a good plan. There was more than one design in which the plan was sacrificed for the preconceived necessities of the front façade. As a matter of fact, neither plan nor elevation should be preconceived; they should grow up together. It is quite as much from the influence of modern life upon the arrangement of our buildings as from the introduction of new materials that we may look for the characteristics of a latter-day style. It should be borne in mind that the money prize accompanying the Soane Medallion would represent a very fair premium even in a competition for an actual building; it is, therefore, worth taking as much pains for as if the Soane building were actually to be erected; and to perfect the designs of an important building actually to be erected, no pains are excessive. But there is about the Soane competition an absence of enduring responsibility which surely ought to stimulate the imagination and prompt young men possessed of all the freshness and daring of youth to embody some of the lofty ideals which they must have conceived. Do we find much daring originality among the twenty-two designs submitted this year? I can hardly say we do. It is true that out of that number there are seventeen or eighteen which might be built without materially decreasing the sum of human happiness, so far as their external appearance is concerned. But is there

one which could be regarded, even by the most enthusiastic, as epoch-making? However, we cannot reasonably expect a new epoch to be started every year, and although, from this particular point of view, my remarks may have been disparaging, yet, if we apply a more ordinary standard, there is something to gratify us in nearly all the designs."

Proceeding, he said: "I must take the opportunity afforded by these remarks on students' drawings to protest against the affectation already mentioned as being prevalent among certain draughtsmen. It affects the accessories chiefly: skies are made to look like masses of telegraph wires, or are divided into parallel strips of dark cloud divided by thin regular lines of sky; figures are introduced hard and badly drawn, imitating the unpleasant style of Aubrey Beardsley. Sometimes the building itself suffers: coarse lines obliterate all delicate detail—and it should be borne in mind that very often 'thick lines hide thin designs'—or the elevation and perspectives are put in with quavering, hard-drawn lines. These are only some of the forms which affectation takes—and occasionally with the hope of attracting attention which would never be bestowed upon the design itself. All such devices ought to be eschewed by a broad-minded student. But let no one be discouraged by finding that he is not so expert a draughtsman as his neighbour. Drawing and designing are by no means interchangeable terms, and a study of the lists of past prize-winners may not only gratify the prize-winners of to-day, but go far towards comforting unsuccessful competitors with the thought that though their names do not appear on any of those lists, they may, nevertheless, be ultimately written in some corner of the scroll of fame."

The President then presented the prizes and certificates gained in the recent competitions. Mr. H. W. Cotman was introduced as Pugin Student for the year, and the Medal of Merit was presented to Mr. J. Forbes Smith, and a Certificate of Hon. Mention to Mr. A. J. Pitcher. The following presentations were also made:—

Tite Certificate and 30l.—Certificate to Mr. Walter Fairbairn; Prize of Ten Guineas to Mr. Ralph Knott; Certificate of Hon. Mention to Mr. W. A. Mellon.

Grissell Gold Medal and 10l. 10s.—Medal, &c., to Mr. Edwin Forbes.

Ashpitel Prize, 1900.—Books, value 10*l.*, to Shirley Harrison, Ashpitel Prizeman; Cheques value 5*l.* 5*s.* each, to Mr. C. H. F. Comyn and Mr. C. E. Varndell.

Owen Jones Studentship, 1899.—Certificate to Mr. John Stewart.

Pugin Studentship, 1900.—Pugin Medal to Mr. James McLachlan.

Essays.—Institute Silver Medal and Twenty-five Guineas to Mr. A. Maryon Watson; Certificate of Hon. Mention to Mr. W. Curtis Green.

Measured Drawings.—Institute Silver Medal and Ten Guineas to Mr. Lawrence L. Bright; Medal of Merit and Five Guineas each to Mr. A. Wyatt Papworth and Mr. H. F. Traylen.

Soane Medallion.—Prize of Thirty Guineas each to Mr. H. M. Cautley, Mr. M. J. Dawson, and Mr. J. B. Fulton.

Owen Jones Studentship and 100l.—Mr. Hervey Rutherford was introduced as Owen Jones Student, 1901; Medals of Merit were presented to Mr. Percy E. Nobbs and Mr. Ramsay Traquair, and a Certificate of Hon. Mention to Mr. E. H. Bennett.

Mr. John Slater, B.A., proposed a vote of thanks to the President and Mr. Gotch for their remarks.

Mr. Aston Webb, A.R.A., seconded the motion, which was agreed to.

The President having briefly acknowledged the vote of thanks, the meeting terminated.

MESSRS. WOOLLAMS & CO.'S SALE.—The old-established business of Messrs. Wm. Woollams & Co., carried on for some years past at 110, High-street, Marylebone, together with the extensive stock of hand and machine-made wall paper, printing blocks, machinery, and trade fittings, with the goodwill of the business, was offered for sale at the Holborn Restaurant on Tuesday last by Messrs. Frederick Miller & Reid, of Clement's Inn. The result of the sale was that Lot 1, comprising the trustee's interest in the business, trade fittings, machinery, and goodwill realised 1,900*l.* Lot 2, which comprised the leases of the premises, was not sold, in consequence of the same being somewhat heavily charged.

THE SURVEYORS' INSTITUTION:

THE PRESENT CONDITION OF THE BUILDING INDUSTRY.

AN ordinary general meeting of the Surveyors' Institution was held on Monday evening at No. 12, Great George-street, Westminster, Sir John F. Rolleston, M.P., Vice-president, presiding.

The minutes of last meeting having been read and confirmed and some donations to the Library having been announced,

The Chairman said he thought it was becoming to refer to the great loss the Institution has sustained by the death of their chief clerk, Mr. Bennett. He was sure all the members would fully recognise Mr. Bennett's good qualities—his unvarying courtesy to members and his many years of devoted service to the Institution. He (the Chairman) was sure they would all join with him in expressing to the widow and son deep sympathy and regret in their loss.

This having been agreed to in silence,

Mr. Thomas Blashill then read a paper entitled "The Present Condition of the Building Industry."

After some preliminary remarks, Mr. Blashill said he would begin by insisting upon one radical difference between the crafts which make up the building industry and the class of solitary trades or manufactures. It was likely that he who was first to foresee the usefulness of a house had to design and build it for himself. It would be the realisation of a single, simple, complete idea. But however complex the idea of a house may have now become, and no matter how many of us may be employed over it, it was still a single and complete thing that was wanted, our separate contributions towards it being useless if they stood alone. It was their combination that gave them value. The architect, the mason, and the carpenter were by no means to be looked upon as so many isolated artists, like the statuary, the potter, or the coppersmith. Unless each worker should understand his fellows and look beyond his own department to the scheme as a whole, if any should act stupidly or maliciously, or if they should quarrel among themselves, it was not one particular part of the building that would be damaged, and it was not a particular class that would suffer, but the whole. Before considering the details of our various arts and crafts, and the arrangements for their harmonious working, it might be well to give some thought to him who sets all to work, but who, standing outside this co-partnership, was, perhaps, in danger of being overlooked. In a building contract he was styled the employer, a term which was wanted for the builder or contractor in relation to the workman; but the client was really the employer of them all. It was he who felt the want of a building or judged it prudent to spend his money in that way rather than in some other. He was the source of all fees, wages, and profits. When his purse was full and open we were busy and prospering; when it was shut we stood idle in the market place. He (Mr. Blashill) was decidedly of opinion that the client was entitled to more consideration than he commonly receives, and it was not certain that even the architect, who was nearest to him, always understood him so well as he ought.

Many of them could speak from sad experience of the difficulty of getting from a client his real meaning, and so embodying it in drawings that he thoroughly understood what he would get for his money. But this had to be done, and no pains were too great to ensure it. Otherwise the client might want to alter the design as soon as he saw the building begun. A good model would be helpful to him, interesting and stimulating to everybody, and instructive even to the architect himself. Insufficient estimates, designs that had to be cut down, or designs that were defective and had to be supplemented, were the fruitful seeds of trouble between all parties and no credit was to be got out of them. Upon this subject there was an admirable letter, that all young architects should read, from John Wilson Croker to Decimus Burton when, as a young man, he was carrying out the Athenæum Club, and had suggested some desirable improvement. He pointed out that, good as the motives might be, few would hear the arguments, while all would see the extra charge, and that a young architect could hardly have a worse reputation than that of one who exceeds his estimates. An architect, of whatever age, who had that reputation was likely to be one with whom contractors as well as clients are dissatisfied.

If the building was simple and alterations were avoided, or if it could be easily supervised from the office, the clerk of works might not be necessary; otherwise he was indispensable. To an experienced foreman this post was usually the only promotion to which he could aspire. But it should really be promotion. To pay a man in a position so highly responsible no more, or even less, than a builder's foreman was unwise. Yet with all that had been done for the artisan little was heard about better pay for the clerk of works.

Notwithstanding what he had said and had yet to say about the client, one must remember that the architect must act fairly between him and the contractor. There were many persons who, whether in their private capacity or as members of public bodies, thought it fair to take every advantage of a contractor and expect the architect to assist. In view of such a contingency it was important that the contract, which was usually stringent enough as regards the contractor, should be incapable of being used unfairly against him. He (Mr. Blashill) need not insist on the delicacy and the difficulty of the position of the architect, who had to act impartially between two parties, one of whom was his employer and paymaster.

It was very important to see that none but builders of good reputation were allowed to tender, and not too many of them. Corporations usually advertised for tenders, and although they might reserve power to reject, it was practically impossible to convince a committee on the clearest evidence as to the unsuitability of a builder if his tender was the lowest. A grasping client would endeavour to take the same course, but the architect should make all possible resistance.

"To get a good tender from a trustworthy builder, three things," proceeded Mr. Blashill, "seem to be specially necessary—to make it perfectly clear what he will have to do and how much he will get; to avoid hampering him with troublesome restrictions and conditions; and so to draw the contract that he shall not fear the application to himself of clauses that are meant for a builder of another sort.

In order to make clear what the contractor has to do, and also to enable him to go on with speed, it is now highly desirable, if not necessary, to prepare full detail drawings before any step is taken to procure a tender. This involves delay at an early stage, and it may be said that the old plan of making out details during the progress of a building in such order as they seem to be required is enough. But the modern system of building requires that the contractor should get in prices of materials and should prepare for his manufacturing processes at the earliest possible date. It is very disturbing to a contractor if he is kept waiting for details till the architect thinks he wants them. A quantity surveyor will tell you that if he has them to work from both speed and correctness will be facilitated. I am assured by a leading contractor that if he can have all the details on signing a contract he will finish a job in half the time. Although this looks like an exaggeration, I am convinced that, so far at least as it relates to those parts of a building which are capable of being hastened, he is not very far off the mark.

I shall have more to say about the possibility of speedy construction, but here I will urge the immense importance of it to contractor and client, and also to the architect. A client as a rule does not want his building twelve months or even nine months hence—he wants it now. For work not speculative the money is generally waiting at poor interest or is within easy reach. The money gain to a contractor in interest, freedom of his workshops, in supervision, and by getting his work quickly finished is enormous. And if the architect can finish his part of the business straight off, while the thing is fresh, so that it is done before he and the client have time to change their minds, that is perhaps the clearest gain of all.

It is worth while for the architect to choose such materials and methods as will make for speed, and to clear his mind of the idea that everybody is expecting him to invent new features, even new mouldings and fastenings, irrespective of their advantages and of his client's willingness to pay the enhanced bill. It is a duty to others as well as to himself to

avoid orders, for variations which are confusing to the contractor's staff are the chief obstacle to the settlement of the account, and give the enemy—and even the friend—occasion to blaspheme.

In my time, the old practice of leaving it to the builders to select the quantity surveyor has given place to selection by the architect, the builders being at liberty to decide, from what may be known of the person selected, whether they can safely accept his quantities as representing the work drawn and specified. A private client of moderate means may have to be protected from the chance of paying more money than he can afford, while he has got no more than the building agreed to be built. It is no comfort to him to be told that the quantity surveyor has made a mistake, or that in settling up the job the contractor has got the best of certain arguments on doubtful points. Many clients have been seriously crippled through such means, or have even had to sell the building that they had hoped to occupy. It is the contractor's business to contract; he is a capitalist who can appreciate his risks and protect himself or stand the loss. But in the case of a public body and of all such clients as are able to run a risk that is very seldom serious the quantities should form the basis of the contract, and, if reasonably priced, should be the basis for settling the accounts.

Sub-letting by the contractor is properly discountenanced when there is danger of his losing control of the work or bringing upon it a person whom the architect may have reason to distrust or of lowering the quality of the work. It should be watched and kept within bounds.

There is, on the other hand, the very risky practice of introducing into a contract a great number of special works for which the architect has made arrangements with other parties whose tenders he puts down in the specification, stipulating that the general contractor shall adopt those parties as 'sub-contractors' under him, and pay them the amounts of their tenders. Serious misunderstandings arise out of this practice.

In such cases the contractor complains that by nominating a particular person with whom he must deal the architect deprives him of the advantage of bargaining as to price and of dealing with the firm he usually employs, and there is a group of objections and risks that may arise through the presence upon a building of the sub-contractor's workmen. But the architect acting for the client must be the person to select and to decide in the case of certain accessories and of certain artists or workmen whose employment cannot safely be left to the contractor's judgment either as to questions of quality, skilful workmanship, or price. I hope that the conditions of contract now under discussion between the Institutes of Architects and Builders may put this matter on as good a footing as is possible in the circumstances (I am sorry to say, from what I have heard to-day, that the prospect is not so good); but I suggest that the items of a contract needing special treatment should be reduced to a minimum. If they are very small in relation to the whole undertaking the contractor is not likely to object to them, and as to such as are left, the contractor should have a reasonable opportunity of making his profit. This, in large matters, is a source of great difficulty.

When in a specification I provided 1,000*l.* to be paid to a sub-contractor for iron construction, and suggested that those who tendered should add their own profit, I found that the tender which was the lowest included nothing for profit, and that the contractor delayed payment in order to get from the sub-contractor 10 per cent. in addition to the usual cash discount. When I added to the provision 100*l.*, so that the contractor should take that as his profit, I found that he had struck the item so added out of the quantities, and was delaying payment with the same object as before. Although this could be put right by paying the so-called sub-contractor direct, there remained the disagreeable fact that the general contractor went without profit, and as he was not a philanthropist any more than I, there was planted a root of bitterness that we could have well spared. If you buy and pay direct for any large quantity of these special materials, leaving the contractor to charge for fixing only, he will miss the profit which he thinks he ought to make on the materials, and it is a question whether either party has reason to be satisfied.

If the architect has taken pains to go to such sources of information as manufacturers' price-lists and showrooms, trade advertisements, and building exhibitions, he ought to know what he wants, and may be able to select alternative specimens, so that the contractor may make the best bargain he can between them, so long as a lower class article is not substituted by the manufacturer for the sake of a low quotation. I had a lesson through specifying a first-class article at a price which I believed to be that which would be payable to the maker. The builder was anxious for the substitution of other goods that were manifestly inferior, alleging the unreasonableness of the manufacturer nominated in the matter of discount. But this person produced evidence that he had offered a discount of 52 per cent. besides the usual discount for cash. I quite believe I had been allowing the full price, with 10 per cent. profit.

I am told that the secret of trade lists with their discounts cannot be penetrated by the architects, and the system cannot be altered. If that be so, we should cut the knot by demanding to know at any time from those who send price lists and offer their goods for our choice their lowest price to a safe cash customer. If this is inconvenient to anybody, the architect should take the ground that things must be made convenient to him. The worst feature in the system of large and varying trade discounts is that they furnish a fund out of which 'secret commissions' can be paid to persons ordering for the client particular goods. I am not sure how far such practices can escape the law, but they are strictly prohibited amongst reputable architects, and the offer of them to a young architect is a snare that ought not to be set. The best course is to let the contractor make or buy and fix every article that can safely be left to him. As to the very large and increasing item of ironwork, we have much need to keep pace with engineers in experience and technical skill. It is best to have the ironwork details calculated and completely worked out in the office, and to let the contractor make the best arrangements he can as to their supply, subject to tests that can very easily be applied. But a large contractor can buy his materials and make up his girders on his own premises. As iron construction supersedes timber construction, a builder's yard will be more occupied by smiths and less by carpenters. A modern builder's yard should be less of a storage place for bulky materials, and ought to be more of a factory. Whether that shall come to pass depends on considerations which I shall invite you to discuss.

There are two more questions arising out of the ordinary routine of work under a contract that must be considered—the faithful execution of the work contracted for and, if alterations have been unavoidable, the final settlement of the accounts. A contract is a business document, legally binding. The specification with the drawings should set out clearly what is to be done. If these are vague there will be disputes, and if a contractor who stands to lose should take all possible advantage of this vagueness nobody need be surprised; but when there is no reason to doubt the 'true intent and meaning' of the specification, to try to evade it by submitting materials of inferior quality or by omitting things set down to be done, is a proceeding the immorality of which should be better understood. The contract is not to do so much of the work as by sharp inspection the contractor can be made to do, nor to supply materials as near to the quality specified as he is obliged to supply; but unless the contract is lawfully modified, to do the very thing set down to be done. A stranger may walk into any shop in any civilised country at random, buy goods, and order them to be sent to his hotel, and, except through misunderstanding or accident, the parcel will contain the number or weight or the length and the quality ordered: otherwise it is fraud. No respectable contractor will put his responsibility lower than that. One who is perpetually trying to shirk his responsibilities will be found out and dealt with accordingly.

The settlement of accounts under a contract affords much legitimate opportunity for discussions on details, with reasons offered on behalf of the contractor why extra works should be treated in one way rather than another so as to increase the charge, and arguments as to the proper prices to be allowed for items outside the contract. But these admissions afford no excuse for throwing dust in the eyes of the surveyor, as by representing that things have been done that were not done or giving false information as to the things done. When such a procedure is mentioned to the contractor it is repudiated, and would not be done under his orders: that it is attempted at all may arise from too great responsibility for the result of a contract being devolved on assistants, who feel that for their own credit they must do all they can to make the job a financial success.

In such a complicated business there is great necessity for the more firm establishment of customs by which the representatives of both parties should be governed. If I ask different surveyors to define 'prime cost' I can get different answers. In a matter of daily routine this should not be possible; it makes the amount of the client's cheque depend not on what he gets in return for it, but on the skill or the pertinacity or the sense of honour of the parties arguing over the final account.

Extras that are occasioned by a changeable client who has been well warned may only be a nuisance to the architect and the measuring surveyor; it is the extra which comes of an ill-considered design or of some sudden inspiration of the architect apart from the client that gives real trouble. Double the time spent over the drawings and half the time over the building should annihilate such extras and would be a gain all round. But all changes act unfairly on the client unless the omissions are watched as narrowly as the extras. With extensive changes and a quantity surveyor bound no doubt to act fairly between two parties, only one of them being before him, a fair settlement is impossible.

I am not sure that without a special guarantee the legal responsibility of the quantity surveyor can be put higher than to do his best with reasonable care and skill. He is indispensable to the architect in a hurry, and his wider experience is always helpful. A specification written by him with all the information before him will be a clearer and more logical document than the architect would be likely to write, but he should not be entrusted with the responsibility of deciding upon everything that does not make for the beauty of the design. Although there is only one person between him and the client the chain that connects them is already too long. He cannot know as the architect ought to know precisely what is wanted and in pounds sterling how much it is wanted, but if, besides his ordinary duties in respect of quantities and the settlement of accounts, he will suggest easier or more efficient means of attaining the end which the client has in view, his influence will be salutary.

The general contractor, as we know him, appears to have been evolved in the first quarter of the last century. The brothers Cubitt are credited with the chief part in this, but in 1819 St. Pancras Church was undertaken by a general contractor, though there seems to have been much done apart from him. Though the old system of separate contracts worked well enough in small jobs, it was a clear gain to get a large and complicated building undertaken by one builder whose staff was under one control. The occupation of a builder is not so attractive that many men without habits and knowledge gained in the business are tempted to embark in it, but if the general contractor is not a practical craftsman he may be a good administrator who has learned enough of his business and is able and willing to keep his engagements. I do not care to choose between them. Both may grow together; their race has developed the builder of to-day, and he is developing the builder of to-morrow.

A modern builder on a large scale should have a fancy for machinery and be ever ready to seize on improvements. His steam-engine will probably drive the dynamo, but the gas-engine will not be despised. Instead of the rattle and friction of heavy chains there is the swift, smooth-working wire rope. His stone is sawn, squared, and elaborately moulded or turned while the modern mason looks on. His moderate stock of timber comes in of any scantling he may order, clean and dry, and fit for high-speed machines. The piece that is going into the shops passes straight through the machine, and will come out with its four sides moulded or grooved, or sunk, or planed complete. Then, after careful markings, morticing and tenoning are an affair of seconds, and all the parts of the framing come together where the joiner awaits them with his wedges

and glue-pot, he being literally and practically a joiner and nothing else, unless he should possess the skill of a fixer as well. His box of tools, once prized, with which he wrought and moulded, is now seasoning at home for a place in some industrial museum. The workshops are warmed and lighted as comfortably as the office, and as building materials in general are amongst the cleanest things to handle, the workman may, if he likes, keep himself as tidy as the clerk.

So far as is practicable these improved conditions of labour in the shop are getting applied on the building. I am not sure how far this is due in London to our native smartness, or how far to the example of Scotland and the North or to the pertinacity of American inventors. I have usually seen either in Scotland or abroad a new invention for saving labour years before it gets on our building sites. As I was looking over a large establishment newly fitted with American machinery, the inventor called to take home his final cheque. During a polite farewell his customer said, 'I suppose we shall see you back some day?' The Yankee replied promptly, 'Yes, sir, I shall be here in the spring with my new system of machinery, which is calculated to entirely supersede this of yours.'

In discussing the English builder of to-morrow it is impossible to ignore the work of the American builder of to-day, who is a constructional engineer. In the recent Paris Exhibition models where shown of a tall office building in New York, only one of many now going up in all the larger American cities. The dimensions and records of progress are full of interest. It stands on a corner plot, nearly 100 ft. by 50 ft., and has eighteen stories above the street, not more—some have twenty-two. The lowest visible stories are in handsome granite work, the highest stories are in elaborate terra-cotta, coloured and enamelled. The builders of it wax enthusiastic as to its artistic character. The time spent in foundations was what they consider rather long, but once above the plinth they made amends. Would it be about fair to say that, with us, a first-class City building might rise at the rate of one story in three weeks? This New York building shot up through its ordinary and plainest stories at the rate of one story in three days, or two stories per week. In the artistic lower and upper stories the rate cannot have been much slower than one story per week; and all this was done in the winter months of November, December, and January. This speed was made possible by their system of skeleton steel construction, filled in and faced with more costly materials. I have details of other tall buildings erected at only twice or three times our pace.

Our Institution has lately provided itself with this handsome building. If our neighbours had no rights of light and air, and we had desired to rehouse the whole of the firms cleared away from this vicinity as well as ourselves, the American building first mentioned might have been duplicated here. It would have risen from the pavement to its present height in less than a month, and would have gone up square and solid 225 ft.—as high as the tall pinnacles of the western towers of Westminster Abbey—in a total period of fifteen weeks; and, I suppose, the internal fittings, with the complicated heating and ventilating apparatus, steam engine, electric plant, and express lifts, would have been finished complete in three months more. I am not advocating these methods. The persons who are carrying them out in America are anxious to try them here, so we may wait and judge for ourselves. I mention this and many other subjects for forethought, not for prophecy.

If we desire to know whether our present arrangements, by which the architect prepares the drawings and the contractor executes the work, are entirely satisfactory to the client, we have not far to seek. There have always been builders able and ready to advise the client as to the design and to carry out the structure. One of these maintained an office, with a staff of architectural draughtsmen, who were in fact architects. Royal Osborne was one of the products of this organisation, and the practice is not becoming less common. If you go to the estate department of one of the general providers to inquire about a house you may learn that they carry out repairs and additions, inspect and renew drainage and build new houses from their own designs, while their staff of assistants may be four times as large as that of average London architects. There is no reason to think that the work is done especially badly, and if the builder or the architect should object to this system they might be asked whether they buy everything at old-fashioned shops or take advantage of the stores. They would find no sympathy outside their own circles, but if they would gain anything out of such a lesson it may show them the good policy of combined efforts to save time and trouble to the client.

We have been considering the details of business under the contract system, but the system of building upon a schedule of prices is adopted on a considerable scale and may be getting more prevalent. One would have thought that in the making of a bargain of that kind without competitive tenders the client would be at a disadvantage, but I know of cases in which prices so arranged have been materially lower than any that could be got by open tendering. Two or three years ago, when brickwork was at its highest, it was being done cheerfully on schedules of prices by more than one firm of good standing at two or three pounds per rod less than the lowest prices in competitive tenders, and at several pounds per rod less than the price at which a builder of great experience showed me that such work was costing him. I shall try to account for this under another branch of the subject.

One of the useful products of times comparatively modern is rather curiously called the speculating builder. We know of speculators in stocks and corn, and have heard of the land speculator. These buy or sell simply with the view of making money by a rise or a fall in a fluctuating market. But this builder, whose object is no doubt similar, proceeds, often with great skill, to acquire land, buy materials, organise labour, and produce a house for the customer whom his sagacity foresees. He is a manufacturer and a merchant. We do not talk of speculating cabinet-makers and speculating hatters. He who, with sufficient command of capital, carries on this business honestly is no speculator in the ordinary sense. Nowadays he buys, not a field, but a farm, makes roads, studies the requirements, the tastes, and the means of his customers, and is distinguished for the excellence of his plans. His elevations are up to the latest architectural craze—in fact, 'art' elevations. He gives the authorities no trouble, pays rather more than the standard rate of wages, turns out his houses, not in groups, but by long roads at a time, and will let on long or short terms or sell outright. If he injures anybody, it is the architect, who, suffering in silence, may be left out of account.

The man who, with nothing to lose, gets hold of sites, is financed, runs up houses that just escape the meshes of the law, mortgages, sells, and is gone, is the jerry-builder. For him building laws are primarily made and are always too lax. Their greater stringency would be a protection to men against whom they are not required.

I approach the subject of the building operative, conscious that it will cover a space large, but not too large, for him who, alone amongst us all, brings into visible shape the things for which his collaborators are content to design and arrange.

Looking back, as I do, just fifty years, when, in a district charmingly remote, I was entrusted—perhaps prematurely—with the oversight of works where, without any sort of machinery, every kind of building material had to be raised from the quarry or felled in the wood, and seasoned and converted for use, the boards and quarterings laboriously planed and grooved, and moulded and mortised with resounding blows—when during hours of labour that were long and for wages astonishingly low the masons and joiners turned out their work with a perfection of finish that modern machinery can do no more than imitate, I can realise the contrast between the old style and the new.

I have always been impressed with the skill of these artificers in stone and wood, the truth of their joints, the perfection of their angles, the beauty of their finished surfaces, the rarity of mistakes in their setting out and of material cut to waste. No architectural draughtsman has such a task before him, or need strain after their exceeding accuracy. Accomplishments such as these were the result of long apprenticeship and the constant handling of well-sharpened tools. After many years spent then and since in direct communication with men of this class I am conscious that, however well we and they may understand each other for purposes of business, we may get no better qualified to enter into their thoughts and feelings. Between us and them there is built up a barrier stout and high. For some of us it may be getting lower, but there it remains.

I remember, long ago, sitting on a bench encouraging a friendly joiner to develop some grievances that he had hinted against the system of which he was a helpless part. One of them has always stuck in my memory—his scorn of the employer, a large builder, who had never done a day's work in his whole life, who was always rushing about in his carriage trying to get financed, and who went off with all the profit on the job. It may have been profit or loss, but I knew that the brougham was used also in looking after the materials on which the joiners were exercising their skill, in finding work for them that they could not have found for themselves, and in visits paid to the architect, in order to convince him that these men had done rather more work than appeared by my weekly returns. I asked why do not you and your mates undertake all this work for yourselves and share the profits? I dare say his reply was conclusive from his point of view, but I gathered that, in his view, if everybody had their rights the finished building would belong to them as the makers of it all.

I might have suggested that, much as they were doing to it, they had not quarried the stone, nor felled the timber, nor hauled or stored the materials, nor brought them to the job, nor paid for the ready-made accessories, nor made the design, nor organised the labour, nor found the capital, nor stood the risks of actions or losses. And yet for fully twelve months before the building could produce to anybody profit or comfort they had week by week been furnished punctually with the means of living, whether other contributors to the result were paid or not. He would probably not have seen the point of this, and in his place I might not have seen it, but it is at least an element worth a moment's thought in the wide subject which we have so little time to discuss.

After all, they were really making or manipulating a large proportion of the items and putting them together, skilfully as I have said, and looking at the lengthened chain of responsibility, passing through so many hands, between the client and themselves, if any of the parties should fail to understand the other, or if the result should not turn out quite so well as had been hoped, the wonder may be that things were no worse. For the barrier that divides them from so many of us is serious; it is not difference of birth, nor of education, nor of social status, nor of dress, or hours of rising, or of mere hand labour or rate of pay. It is the practical fixity of their position without reasonable expectation of betterment while craftsmen; with little hope of getting out of their groove and with no assurance of a comfortable provision against old age.

The whole tribe of clerks or assistants, down to the boy who fetches and carries, is paid by time at wages often no higher than those of the workman, but from the day they enter their calling they are cheered with prospects of promotion which, though seeming to recede at times, will in the ordinary course of events, with age, industry, experience, and good manners, come within reach, and may bring any of them to the highest position in the scale. But if, at the age of manhood, the clerk, or assistant, or office boy should see that he was encompassed by a dead wall over which, in ordinary routine, he could never climb, through which he could never break, no matter how he might grow in age or strength or grace, he would look upon his position as that of a serf, and if wise and energetic he would get out of it into the free air by whatever road. If slow of thought or unlucky, he would sink into the chronic grumbler against fate and circumstances. For the burden of servitude does not gall by its weight and composition so much as by its deadly hoplessness. I have seen such men in such positions, and I know. But if there were to these last just one loophole open in the prospect of better pay, is there any reason to doubt that, either alone or in combination, they would use every effort to scheme and contrive as these workmen do towards their ideal of life on a higher scale?"*

* The remainder of the paper will be given in our next issue.

Illustrations.

PART OF A TAPESTRY PANEL.

THIS illustration is from a fine water-colour drawing by Mr. Hervey Rutherford, forming a portion of the drawings for which he obtained the Owen Jones Studentship this year.

It is a portion only of a composition representing the adoration of the infant Jesus. The original work is Flemish and of early sixteenth century date.

DESIGN FOR FAÇADE OF A MILITARY MUSEUM.

THE illustration is of a drawing hung in the Royal Academy Exhibition, 1900. The design and details of the façade are intended to convey as clearly as possible the nature of the building—viz., a museum in which the military relics of a nation might be preserved.

J. E. SPAIN.

DESIGN FOR LEAMINGTON FREE LIBRARY AND TECHNICAL SCHOOLS.

THIS design was submitted in a limited competition in May, 1899, and was awarded the second premium. The building was to consist of a free library and science and art schools. The instructions to competitors were very explicit, and gave the approximate area of every room; the limit of cost was stated to be 12,000*l*., exclusive of furniture.

The building, planned for a corner site, consisted of a central block with obtuse-angled wings, parallel with the adjoining roads. The library, in the east block, was arranged entirely on the ground floor, with main entrance from the principal road and staff entrance at rear. The central block comprised entrance to schools, cloakrooms, and stairs which gave access to the science and technical schools on the north-west and the art schools on the east, over the front portion of the library. The art schools were thus entirely lighted from the north, the small windows on the south front being provided for purposes of ventilation. A relief stair and emergency exit was arranged at the extreme north-west of the building. The caretaker's residence was placed on the upper floor of the central portion with separate entrance and stair.

Externally the building was intended to be faced with red brick up to the plinth level, the upper part of the walls being finished with "rough-cast" rendering with arches, and window aprons in red brick, and window sills, cornice, doorways, and dome in Hollington stone. The roofs were proposed to be covered with red Italian tiles. The drawing from which the illustration has been reproduced was exhibited in last year's Royal Academy Exhibition.

J. E. NEWBERRY.

THE HOMESTEAD, WOODBOURNE-ROAD, EDGBASTON.

THE aspect and view from the site necessitated the dining-room of this house being placed at the south-east corner, and the kitchens at the opposite diagonal corner, in order to be near the tradesmen's entrance and the separated out-offices in the rear, the difficulty of access between the two being got over by placing the pantry under the stairs. This position is found convenient for answering the front door. The hall is in communication with the dining and drawing rooms by wide folding doors, and when these are open an apartment 56 ft. long is obtained.

The house is finished with oak, Kenilworth stone fireplaces, some ornamental plaster, and metalwork. The whole of the external walls are covered with rough cast, the chimneys being built of old bricks and the roofs covered with Colley Urston stone slates.

The house is at the top of a sloping site, a series of terraces being formed with retaining walls of old bricks. Messrs. James Smith & Sons, of Birmingham, were the builders, and Messrs. Bateman & Bateman the architects.

THE GABLE HOUSE, KING'S HEATH.

THIS house was erected about five years ago upon a residential estate near Birmingham now being developed for this class of property, and adjoins a new station in course of construction by the Midland Railway upon their line to King's Norton. Thin Leicester facing bricks, with Quiting stone of a yellow colour, are used externally, and Codsall stone of a red colour for the chimney-pieces internally. The roofs are covered with tiles of mixed colours, cleft oak boarding being used for the bay window and gabled over. The walls of the rooms are covered with panelling, and the ceilings are of open exposed timbers. The archway is useful for getting in and out of the carriage in bad weather and for the children to play under. The proprietor employed his own workmen, who were directed by Messrs. Bateman & Bateman, the architects.

COMPETITIONS.

JOINT ISOLATION HOSPITAL, DEVIZES.—A meeting of the committee for carrying out the Joint Isolation Hospital for the Urban and Rural District of Devizes, met at the Town Hall on the 21st ult. for the purpose of accepting the report of Mr. C. E. Ponting, the assessor who had been appointed to examine forty-five sets of plans sent in for competition, in response to an offer of two premiums of 20*l*. and 10*l*. Five sets of plans were selected, and the committee awarded the first premium of 20*l*. to "Hygiene II." (Messrs. E. C. Isborn, Devizes, and G. Boughton, Woodlands, Ryde, Isle of Wight). The second premium of 10*l*. was awarded to "G" (Messrs. Bell, Withers, & Meredith, London). Three other sets were accepted, in reserve, viz., "Efficiency" (J. W. Goodman, Reading); "Esculapius" (R. J. Brinkworth, Chippenham); and "Deviser" (H. H. Clark, London). The committee agreed to accept the second premiated set of plans as being most likely to come within the amount they wished to spend.

SEVENOAKS ISOLATION HOSPITAL.—There were forty sets of plans sent in in this competition, in which Mr. Keith D. Young, F.R.I.B.A., acted as assessor. The premium was awarded to the plans signed "Lucidity," by Mr. W. H. Ansell, A.R.I.B.A., 11, Great James-street, Bedford-row, W.C. The Urban District Council has endorsed the assessor's award, and the hospital—with certain omissions and modifications—is to be proceeded with at once.

BOARD SCHOOL, VICKERSTOWN, BARROW-IN-FURNESS.—A competition was recently held at Barrow-in-Furness for a Board school to be built near the growing suburb of Vickerstown, on Walney Island, for the Barrow-in-Furness School Board. The competition was open to local architects only, and Mr. Thos. Bell, of Burnley, was appointed the assessor. He placed the plans of Mr. H. T. Fowler, architect, of Ramsden-square, Barrow-in-Furness, first, those of Mr. J. Y. Macintosh second, and those of Mr. W. Moss Settle third, and the decision has been confirmed by the Board, who have appointed Mr. Fowler their architect to carry out the work. The school is to provide accommodation for 600 children, including temporary accommodation for 180 infants, who will be removed to a separate infants' building as soon as the requirements of the district necessitate the increased accommodation.

ARCHITECTURAL SOCIETIES.

LEEDS AND YORKSHIRE ARCHITECTURAL SOCIETY.—A meeting of the Leeds and Yorkshire Architectural Society was held in the society's rooms, Park-street, Leeds, on the 18th ult., when a paper was read by Mr. H. C. Corlette, of London, on the "Planning and Design of Churches." Mr. Corlette said he did not propose to discuss doubtful points in ecclesiastical architecture, or the history of churches, but to address to practical men a few practical remarks upon their planning of the building with which their interest as architects was especially associated. In the first place, he pointed out with some emphasis the necessity of the building being made to belong to and to harmonise with its surroundings, and he proceeded to advise architects not to put too much egotism into their composition. Let the personal element be found rather in their work than in an ostentation, amounting to vulgar display, which forced its recognition upon the notice of all who looked at the building. Proceeding, he offered some advice with regard to the selection of sites and the adaptation of the buildings to their surroundings; and he went on to deal with the technical features of plans, such as those relating to the construction of the sanctuary, the choir, the nave, the side-chapel, and the vestries.

ARCHÆOLOGICAL SOCIETIES.

BRITISH ARCHÆOLOGICAL ASSOCIATION.—A meeting was held on the 20th ult., Mr. S. W. Kershaw, M.A., F.S.A., presiding, when an interesting paper was read upon "Some Old Halls in Wirral," by Mr. W. Ferguson Irvine, who illustrated it by many fine photographic views shown by the limelight lantern. The Hundred of Wirral possesses many special characteristics, due mainly to its peculiar surroundings and situation. Wirral, or "Wurrall," as the old natives call it, is the tongue of land lying between the estuaries of the Mersey and the Dee, and contains the only coast line which the county of Cheshire possesses; it is, in fact, a peninsula, being connected with the rest of the county by one narrow end. The halls and manor houses of Wirral differ in many respects from the rich examples of domestic architecture for which Cheshire is so celebrated; nevertheless, they are not without quaint and picturesque features. One peculiarity about them is the half-timber construction, which is confined entirely to the frontages, the rest of the walls being of masonry. In Bidstone Hall we have a good specimen of the style of architecture of the early seventeenth century, the house being built in 1620 to 22. In the deer park is still standing an old wall over 6 ft. high and about 4 ft. thick built of rough stones, which is referred to in almost every lease of the Hall as far back as 1609 as "the great stone wall"; its antiquity may be much greater, as tradition records it was built when wages were a penny a day. The wall is popularly known amongst the villagers as the "Penny-a-day Dyke." Chief amongst the buildings described and illustrated were Leasowe Castle; Storeton Hall, connected with many memories of the historic house of Stanley, dating from about 1360, and architecturally a good example of the fourteenth century; Shotwick Hall, and the partly timbered houses of Irby, Hooton, and Plessington. A somewhat unusual feature of these old halls is that not one of them can boast of having been the residence of a king or queen, yet the histories of many of them, as told by the lecturer, were romantic and interesting.

ENGINEERING SOCIETIES.

THE INSTITUTION OF JUNIOR ENGINEERS.—The second Lecture of the series on "Works Management" was delivered by Mr. A. H. Barker, Wh.Sc., B.A., B.Sc., at the Westminster Palace Hotel, on the 20th ult. Mr. Ernest King, Vice-Chairman of the Institution, presiding. Continuing the discussion of carrying and lifting appliances introduced in the first Lecture, hand-cranes, ordinary power cranes, and cranes worked electrically were considered, the relative economy in working being pointed out. Their cost was treated, as also that of radial cranes, both hydraulic and hand. Trucks and rails in the shop and railway sidings were dealt with. The lecturer then passed on to the essential features of the foundry; and considered the cost of cupolas, and foundry lifting and conveying appliances. Moulding machines of various types were described, and the relation of the number of moulders and labourers to output was entered into. The appliances of the brass foundry received attention, particular reference being made to the crucibles. General arrangements of various works were reviewed, the most advantageous positions of the different departments being shown. The systems appertaining to the tool-room and stores were touched upon, and questions with reference to heating, ventilating, and lighting discussed. Further information on the points raised in the Lecture was given by Mr. Barker at the close, in reply to various questions put to him. The third Lecture takes place on the 7th March.

NEW LONDON FIRE BRIGADE STATIONS.—The new fire-station in Redcross-street, City, was opened on the 23rd ult. The station contains an engine-room 33 ft. by 47 ft., watch and recreation room, a basement for laundry and stores, and the quarters for the men.——The fire-station which has been erected in Uxbridge-road, Shepherd's Bush, was opened on the same day. The building is of red brick, and the cost has been 12,600*l*.

THE LONDON COUNTY COUNCIL.

THE last meeting of the present London County Council was held on Tuesday in the County Hall, Spring Gardens, Alderman Dickinson, Chairman, presiding.

Loans.—On the recommendation of the Finance Committee, it was agreed to lend the Battersea Borough Council 10,600*l.* for electric light installation; the Kensington Borough Council 2,748*l.* for the extension of the town hall; the Stepney Guardians 1,845*l.* for erection of boiler-house at the workhouse; and the Metropolitan Asylums Board 18,316*l.* for purchase of land and erection of buildings.

Wandsworth Park.—The Parks Committee recommended and it was agreed, that the estimate submitted by the Finance Committee be approved, and that an expenditure of 12,500*l.* be authorised for the embankment and laying out of Wandsworth Park, including the provision of campshedding along the river front, the supply and erection of iron boundary railings next Putney Bridge-road, the erection of conveniences, bothy, cart shed, tool shed and temporary bandstand, the provision of three watch boxes, and the execution of the necessary ground work; and that the Parks Committee be authorised to invite tenders and enter into any necessary contracts for the supply of materials or execution of work.

Tender.—On the recommendation of the Highways Committee, it was agreed that the tender of the Stirling Boiler Company to supply, for a sum not exceeding 22,782*l.*, the boilers and mechanical stokers required for the electricity generating-station, to be erected by the Council at the Camberwell tramways depôt, be accepted.

London Government Act, 1899—Transfer of Powers.—The Building Act Committee reported as follows, the recommendation being agreed to:—

'By the provisions of the London Government Act, 1899, the power hitherto exercised by the Council under Section 84 of the London Building Act, 1894, to license the setting up of wooden structures, and the power to take proceedings for default in obtaining, or observing the conditions of, a licence under that section, are transferred to the Metropolitan Borough Councils constituted under the first-mentioned Act. There is, however, some doubt as to what constitutes a "wooden structure" within the meaning of Section 84 of the London Building Act, and a question has arisen with the Council of the City of Westminster as to whether temporary wooden stagings put up on public occasions, such, for instance, as stagings erected in connexion with the opening of Parliament, and on other recent occasions, come within Section 84 of the Act as "wooden structures," or within Section 83 of the Act as "structures of a temporary character." The City of Westminster contend that they come within Section 84, whereas the solicitor advises us that, in his opinion, they do not, but come within Section 83. We have been in communication with the Local Government Board upon this and other points of difficulty arising upon the transfer of powers under the London Building Act, and a reply has been received stating that the Board have no jurisdiction to determine the question, which is rather one for the decision of the High Court in accordance with the provisions of Section 29 of the London Government Act, 1899. We have now received a letter from the Council of the City of Westminster, stating that they have resolved to at once take the necessary steps for the submission to the High Court of the questions raised. We recommend—That the solicitor do take all necessary steps for supporting before the High Court the view of the Council that structures or erections put up on public occasions do not come within the provisions of Section 84 of the London Building Act, 1894.'

Office Accommodation.—The Establishment Committee proposed to let on lease the ground-floor of 25, Cockspur-street.

Mr. Piggott moved, and Sir J. B. Maple, M.P., seconded, an amendment to refer the matter back until the special committee had reported on the site for the new county hall.

The amendment was lost, and the Committee's recommendation was accepted.

After transacting other business, the Council dissolved.

The new Council, which is to be elected on Saturday (to-day), will assemble on Tuesday week. Meanwhile, the Committees will continue to hold office until March 8.

SHUTTLEWORTH MEMORIAL TABLET, EGLOSHALE CHURCH, CORNWALL.—A memorial tablet to the late Professor H. Shuttleworth has just been unveiled in Egloshale church. The tablet, which was the work of Messrs. Hems, of Exeter, covers an urn containing the ashes of the late professor.

THE ARCHITECTURAL ASSOCIATION:

FIRST SPRING VISIT, FEBRUARY 16.*

MR. BENTLEY'S Westminster Cathedral is in many ways the most interesting building in progress in London, and the Association was wise in selecting it for one of their periodical visits.

Up to the present time it is only possible to gauge the ultimate effect of the interior by studying the proportions and the general lines; but from the point of view of construction the visit was opportune, as in several instances the centering for and the filling in of the vaulted aisles could be readily followed.

Since the previous visit of the Architectural Association considerable progress has been made, especially as far as the Cardinal's House is concerned. The general drawings of the cathedral only were on view, and, though these were of great interest, it would have been of assistance to the members if the drawings of the Cardinal's House and other departments of the scheme could have been exhibited showing the working of the whole plan.

The assembly hall, with its barrel vaulted ceiling, is the most notable feature of the building, apart from the cathedral; it is placed in a position accessible to the public and also to the residential and working departments.

In a few isolated cases marble columns and caps were in position in the choir and nave, but a considerable period must yet elapse before the building assumes any appearance of finality.

The exterior is in every way a remarkable study, the effort to obtain grandeur being fully realised. The tower, which is becoming a familiar monument, is approaching the final stages, and grouped with the whole building there is a dignity in the square mass which is unusual and entirely satisfactory.

At a future date it is hoped that the Association will again have the opportunity of visiting the building.

THE ARCHITECTURAL ASSOCIATION DISCUSSION SECTION.

THE sixth meeting of the Discussion Section of the Architectural Association for this Session was held at 56, Great Marlborough-street, W., on the 22nd ult., Mr. C. H. Strange, Chairman of the Section, in the chair. The paper of the evening was entitled "Domestic Heating, Ventilating and Lighting," by Mr. Fredk. J. Osborne Smith. Mr. Osborne Smith called attention to the fact that high temperatures were detrimental to health and were often the cause of lung trouble. He then pointed out the importance of making the most use of the aspect when planning a house, of keeping the outer walls as thick as circumstances would permit, and of guarding against the prevailing habit of using too much glass in the form of windows, thereby increasing the cooling surface of the room.

The ventilating grate was suggested as being very suitable in living rooms, inasmuch as fresh air could be warmed and introduced not only into the room, but also into the bedroom over, care being taken to divide the air chamber into two parts. He advocated warming the hall and staircase as well as the rooms, either by a grate or radiator, which latter should be placed near the entrance door; in addition to being warmed they should be thoroughly ventilated. In small houses a single radiator might be worked off the hot-water service if convenient, and would be found economical and efficient, stop-cocks being provided to shut it off in summer. Independent warming is advantageous, but requires extra attention, although it is a great convenience to be able to keep a country house warm and dry when not being occupied by means of radiators or pipes judiciously placed under windows and in corridors. Slow combustion grates with fire-clay backs and sides were recommended for warming, inasmuch as they saved fuel and ventilated the rooms, besides being more cheerful than stoves.

Considering ventilation, Tobin tubes were condemned as being filthy and antiquated. The author preferred Sherringham ventilators placed near the ceiling in such positions as would favour a cross current. Ventilators, he said, do not always act as outlets, and this should be borne in mind when deciding the position for them. In conjunction with these ventilators deep sill fillets for double-hung sashes and fanlights for mullioned windows were advised.

Lighting was briefly dealt with, mineral oil lamps being suggested as a very pleasant light. Electric light was considered expensive, but as possessing many advantages, although many found it harmful to their eyes.

Mr. F. G. W. Buss opened the discussion and proposed a vote of thanks to the author for his paper. Mr. Ernest King seconded, and the discussion was continued by Messrs. R. H. Weymouth, J. H. Pearson, L. S. Crosbie, G. Lee, A. Gray, and C. H. Strange.

Mr. Osborne Smith having replied, the Chairman announced that the next meeting will be held on March 13, when Mr. H. P. G. Maule will read a paper entitled "The Architect and the Garden."

* Unavoidably postponed from last week.

BUILDERS' FOREMEN AND CLERKS OF WORKS' INSTITUTION.

THE annual dinner of the Provident Institution of Builders' Foremen and Clerks of Works was held in the King's Hall, Holborn Restaurant, on Saturday last week under the chairmanship of Mr. B. I. Greenwood (who presided in consequence of an accident to his partner, Mr. Jas. S. Holliday, who was to have occupied the chair), supported by Messrs. Banister F. Fletcher, C. Dunch, R. B. Marsh, H. O. Ellis, C. Wall (President of the London Master Builders' Association), Howard Colls, S. B. Depree, L. F. Maton, A. Kibly, A. Roberts, and T. Costigan, the company numbering 434.

The toasts of "The King and Queen and all the Royal Family," and the "Navy, Army, and Imperial Forces," having been honoured (Mr. Thomas Costigan, Secretary of the London Master Builders' Association, responding for the "Navy, Army, and Imperial Forces"),

The Chairman proposed the toast of the evening, "The Provident Institution of Builders' Foremen and Clerks of Works." The Institution, he said, had distributed during the past year the sum of 390*l.* to the needy and necessitous, and who could measure the good that had been done, and how many lives brightened, by the judicious distribution of even such a comparatively small sum as that? The Institution had many good rules, one of which was that no clerk of works should be admitted who did not know a trade. He appreciated that rule, for he had had some experience of clerks of works, and he said without hesitation that the worst clerk of works one could have to deal with was the man who did not know his trade—the man, for instance, who was sometimes sent out from an architect's office to act as clerk of works. There was no man more difficult to please than the man who did not know what he wanted. The Institution was one to which all clerks of works and foremen should belong, and he was glad to say that some of the foremen in the employ of his firm were members of the Institution, and he thought they all ought to be. He was inclined to think that if all the foremen engaged by his firm would become members of the Institution, the firm would be very pleased to pay half of their subscription. Why not all? some might say. Well, he believed in helping a man to do a thing, but he did not believe in doing it all for him, and that was his reason for objecting to the Workmen's Compensation Act. It was a good thing that a workman in case of accident should be supported during the time he was prevented from proceeding with his ordinary avocation: he should be helped, but not have it all done for him, otherwise he became a pauper. Builders' foremen and clerks of works came more directly into contact with the workmen than did the employer; and no doubt they had noticed the great and growing danger which threatened the commercial prosperity of the country: he referred to the persistent and systematic limitation of output. There had never been in the labour history of the country any more pernicious or abominable system than that of refusing to do what a man could very well do, and ought to do, if he had the will, and, unfortunately, that system prevailed in almost every industry. If they wanted to know why British trade was diminishing, and why foreign competitors were getting trade that used to belong to us, they would find the cause in the limitation of output he had referred to. The work that was now done for

a fair day's pay was nothing like that which used to be done. Moreover, the employer was not now able to say what he wanted; all he could now say was what he would like to have. No doubt things would improve, but the sooner the better. The Institution had been able to carry forward a balance of 209*l.*, which was a very satisfactory thing. The expenses of administration were very small, and much of the work that was done by the officers of that Institution must be regarded as honorary work, for the amount of their remuneration was very moderate.

Mr. John Beer, secretary, replied, remarking that the past year had been one of steady progress for the Institution. A larger amount had been paid to pensioners than had ever been paid in one year before, and a larger sum put to the reserve fund. But there were many members who were in the evening of their life, and the funds of the Institution might have a heavy call on them at any time. Two years ago the amount of the pensions had been raised, and it was hoped to still further increase the amount, giving the men 18s. per week, and the widows a sum that would at least pay their house rent.

Mr. Howard Colls then gave the toast of the "Architects and Surveyors." He referred to the very high standard English architecture had attained to during the last years of the Queen's reign, and said that some of the work that was now done would compare very favourably with the work of the past, and, in his opinion, it would last longer, because it was built better, than the buildings of past times. What was wanted in the erection of a building was good fellowship, from the highest to the lowest, combined to produce first-class work. The responsibility of all connected with building was very great, and a mistake made in building work remained to remind them of it, and that showed how important it was to strive to do the best work.

Mr. Banister Fletcher, who responded, said architects had a good deal to learn—amongst other matters, how to insure the erection of halls like the King's Hall suitable for hearing in. But there was so much to learn, and an architect was supposed to know so much, that it would be necessary to live much longer than one usually did before a man could be thoroughly master of his profession. As they could not do that, they had to rely to an extent on men in the trades allied to architecture, and on builders' foremen and clerks of works, and to them architects were specially indebted. As to the chairman's remarks in regard to trades-union policy, he might say that in the United States a man worked as hard as he could, not as little as he could; whereas in this country the idea with some workmen seemed to be to work as little as possible and get as much pay as possible. For a man to be told that he must not lay more than a certain number of bricks per day in order that a man round the corner might have the benefit of it, was not a system which ought to have the support of the British nation. In the United States a man did get better pay than a man here, but he did twice the work. The system in this country greatly added to the cost of building, which was becoming almost prohibitive on that account.

Mr. Fletcher then proposed the toast of "The Builders and Contractors," remarking that the prosperity of the builder was linked with that of the architect. The lot of the modern builder and contractor was clearly not a happy one, for he had to contend, amongst other difficulties, with various labour disputes, and such matters as the price of materials which were continually being brought into the market, and the complicated matter of extras and omissions. Speculative and jerry builders were, he believed, a product of the present wants of the age, and were as necessary as the more respectable builder and contractor. It had occurred to him that an Institution like the Builders' Foremen's Provident Institution might have obtained quarters at Carpenters' Hall, and he was quite sure that the Carpenters' Company would be glad to give them accommodation which would probably be an advantageous matter to the Institution in the way of rent. With the toast he coupled the name of Mr. Charles Wall.

Mr. Wall, in reply, said that Mr. Fletcher was quite right in saying that a builder had many difficulties to face, but if they wanted to know the real difficulties of a builder they should become a President of the Master Builders' Association. In that capacity he had had several attacks of conciliation. Mr. Wall then spoke of the difficulties which had existed as to which trade should do certain work. He felt that the time had arrived when those men who could do the work best should undertake it, and further that the builder ought to know better than any one else what trade should carry out certain work. The builder to an extent was in the hands of the architect, the clerk of works, and the foreman. Good builders tried to pay the highest wages they could, for after all it was not so much a matter of wages as a question of how much work one got for those wages. It was absolutely necessary, if building was to be continued in England as it ought to be, that the cost must be materially reduced. That was not to be done if the builder continued to be overruled by trades unions, and it was for any builder's foreman or clerk of works who belonged to a union to consider whether he would serve the master or the union. He believed that men could not serve two masters. Builders did not want to deprive their men of any benefits they might be getting from a trades union, but it was most important that a builder's foreman should be a servant of the builder, and not of the trades union.

Mr. J. Stapleton (treasurer) proposed the toast of "The Governors and Trustees" (Messrs. F. H. Dove, H. Colls, and J. Greenwood); "Donors and Honorary Subscribers and Visitors," coupled with the name of Mr. J. C. Hill, President of the Institute of Clayworkers.

Mr. Hill suitably responded, and enumerated the qualifications necessary for a builder's foreman and the difficulties the builder's foreman had to contend with.

Mr. F. Hann then proposed the health of the Chairman, and Mr. Greenwood, in reply, said that in regard to trades unionism he might mention a good retort to a man who once said he did not do too much work in order to make a job for another man. "Yes," said the workman's friend, "and I'll tell you where that man is. It is quite true you are making a job for another man, but he lives in America, and when he gets the job he will keep it."

The last toast was that of "The Press," coupled with the name of our representative.

During the evening subscriptions to the amount of 165*l.* 10s. 6d. were announced, including 21*l.* from Mr. J. S. Holliday.

A NEW ALTERNATING CURRENT ARC LAMP.

THE Reason Manufacturing Company, of Brighton, exhibited last week at the Croydon Electricity Works a new type of arc lamp invented by Mr. Frank Lewis. Mr. Lewis is well known in the electrical profession as the inventor of an alternating current arc lamp suitable for "parallel" running which is extensively used. The new lamp which he is bringing out is suitable for "series" running, and will probably come into extensive use for street lighting. At the Croydon works there were twelve lamps on view exhibited in series on a thousand-volt alternating current circuit. Some of the lamps were hung on poles in an adjoining field, and others were exhibited in the test-room, so we had the opportunity of inspecting them under various conditions.

The mechanism of the new Lewis lamp is extremely simple and is very effective in action. The principle is to shunt the alternating arc by a choking coil, so that the failure of any arc has practically no effect on the rest of the circuit. A clause in the specification states that even when 30 per cent. of the arcs are extinguished the remainder must continue to burn perfectly in series. The lamps exhibited passed this test successfully, as there was no perceptible flicker in the other lamps when two of the arcs were broken.

The lamp is of the enclosed type—that is, the carbons glow in a small glass globe, which prevents oxygen getting access to the arc. One effect is that the carbons consume away very slowly. The carbons in a Lewis lamp will last seventy hours, whilst in an ordinary "open" arc lamp they only last ten hours. This effects not only a considerable saving in the annual bill for carbons, but a still greater saving in the cost of maintenance, as one trimmer can attend to four times as many lamps. Another effect of enclosing the arc is to distribute the light much better and to make the quality of the light approach sunlight more nearly.

The voltage across the terminals of each lamp is 70, and the current they take is about 7 amperes. Mr. Lewis has noticed the curious fact that the more alternating current arcs we have in series the greater the voltage they require between their terminals. The product of the volts and the amperes is only about 20 per cent. greater than the watts taken by the circuit, and compares favourably with the best results hitherto obtained in series arc lighting. This apparent discrepancy between the true watts and the apparent watts can be considerably reduced by supplying a "balancing" current in parallel with the circuit, and the inventor showed us several methods by which this could be done.

No claim is made for any very high efficiency in converting the electric energy into light energy. From the central-station engineer's point of view, the most important points in connexion with any system of arc lighting are immunity from breakdowns and small cost of maintenance. These are far more important considerations than economy in first cost or very high "light" efficiency. In our opinion the Lewis series system fulfils these two essential requisites, and as two sets of thirty-three of these lamps are already ordered for lighting along the tramway routes at Croydon, central-station engineers will soon have an opportunity of inspecting these lamps in actual work.

THE HOUSING OF THE WORKING CLASSES.

THE Report of the Housing of the Working Classes Committee of the London County Council, containing the following paragraphs, was received at Tuesday's meeting of the Council, with the exception of the part relating to the Tottenham scheme, which was postponed:—

Reid's Brewery Site, Clerkenwell.

"We have had under consideration plans for the development of the Reid's Brewery site, Clerkenwell, which was acquired by the Council for the provision of accommodation for persons to be displaced by the formation of the new street from Holborn to the Strand. The site has frontages to Clerkenwell-road, Leather-lane, Portpool-lane, and Gray's Inn-road. The plan which we have approved, and which has also received the approval of the Secretary of State, provides for the erection of five-story block dwellings all round the site except on the frontage to Gray's Inn-road, where the existing buildings will remain for the present. These dwellings will be pierced with six archways up to the second floor, giving access to the interior of the site. There are also two existing archways from Gray's Inn-road. The main interior of the site will be occupied by five-story transverse blocks of dwellings divided by yards and gardens. The narrow end of the site next Gray's Inn-road will contain another short block of five-story dwellings, and the remainder of the site between this block and Gray's Inn-road frontages will be laid out as a playground and garden. An estate office and twenty-three shops will be provided on the ground floor of the dwellings facing Clerkenwell-road and Leather-lane. The accommodation will consist of 551 tenements, of which only thirteen will be associated and the remainder self-contained. The thirteen associated tenements all consist of one room; there will be 361 two-room tenements, 136 three-roomed tenements, and 41 four-roomed tenements. Accommodation will be provided in all for 2,614 persons, exclusive of the shops. We have received from the architect the working drawings for three of the interior blocks of dwellings, and have given instructions for bills of quantities and other particulars to be prepared. We propose that the course adopted on the Millbank estate of having a number of blocks erected under the same schedule of prices shall also be followed in this case.

Seymour and Somerset Buildings, Churchway, St. Pancras.

We report for the information of the Council that working drawings are completed for Seymour and Somerset Buildings, Churchway, St. Pancras. These dwellings are to be erected on the two sites on the east side of Churchway on the land acquired from Lady Henry Somerset under the London (Churchway, St. Pancras) Improvement Scheme, 1895. Each block will be five stories in height, and accommodation will be provided in 100 tenements for 472 persons. These tenements will all be entirely self-contained, and will comprise one tenement of one room, sixty-six of two rooms, twenty-nine of three rooms, and four of four rooms.

Totterdown Fields Estate, Tooting.

On January 23, 1901, the Council decided to acquire under Part III. of the Housing of the Working Classes Act, 1890, an estate at Tooting, consisting of about 38½ acres, and known as the Totterdown Fields Estate. The financial and other par-

ticulars which were then submitted showed that the estate could be successfully developed by the erection of cottages. Since that date we have had under consideration the details of various methods of development, but it has been a matter of some little difficulty to frame a scheme which should comply strictly with the Council's general requirements as to working-class dwellings, and which at the same time should avoid putting too great a number of cottages on the estate. We are now in a position to inform the Council that we have approved a scheme of development which successfully meets both these difficulties.

The particulars of this scheme are as follows :—Three lateral streets run eastwards from Tooting High-road straight through to Church-lane. The middle one of these three will be 45 ft. wide, and the other two 40 ft. wide. A short 40-ft. street connects the southern of these lateral streets with the middle one, and from this short transverse street a fourth lateral street, also 40 ft. wide, runs straight through to Church-lane. Three main 45-ft. streets divide the estate transversely, and are so arranged as to provide for their continuation on the development of the adjoining land. All the 45-ft. streets will be lined with plane trees, which will be planted just inside the forecourts of the cottages abutting upon them. The forecourts abutting on the 45-ft. streets will be 14 ft. in depth, and the forecourts abutting on the 40-ft. streets will average 5 ft. in depth. The arrangement of roads outlined above enables the whole estate to be divided into 1,244 plots for the erection of cottages of four different kinds. The average sizes of the plots will be as follows :—

	Area in square feet.	Frontage.	Depth.
		ft. in.	ft. in.
First-class cottage plot	2,494	33 8	74 0
Second-class cottage plot	1,164	16 0	72 9
Third-class cottage plot	799	13 2	60 6
Fourth-class cottage plot	1,210	18 5	66 0

The minimum distance between the streets will be 103 ft. and the maximum will be 158 ft. The distance between the backs of the houses will vary from 38 ft. to 90 ft. The cottages will be arranged in terraces of about eighteen cottages to each terrace; and between these terraces will be a space of about 15 ft. None of the cottages will have back additions, and the free circulation of air will therefore be unimpeded. The accommodation provided will be according to the following schedule :—

Cottages.	No.	No. of rooms.	No. of persons provided for.	Average size of Living room.	1st bedroom.	2nd bedroom.	3rd bedroom.
				sq. ft.	sq. ft.	sq. ft.	sq. ft.
1st class	29	5 and scullery	290	150*	104	101	96
2nd class	100	4 and kitchen	800	158†	115	98	96
	109	3 and kitchen	654				
3rd class	818	3 and scullery	4,908	144	96	96	—
4th class, upper flat	188	3 and scullery	1,128	130	96	96	—
4th class, lower flat		2 and kitchen	752	144‡	101	—	—
Totals	1,244	—	8,532	—	—	—	—

* Parlour, 99 sq. ft. † Kitchen, 79 sq. ft. ‡ Kitchen, 60 sq. ft.

It will thus be seen that it is proposed to put 8,532 persons on an estate of about 38¾ acres. This is an average of about 221 persons per acre. This may at first sight appear a high average when compared with the whole of London (57), but it must be borne in mind that the latter number of persons per acre is arrived at by including in the acreage land covered not with dwelling-houses alone, but with factories, warehouses, and commercial property generally, as well as all open spaces. The only fair comparison would be between the estate as proposed to be developed and an area of similar acreage exclusively covered with dwelling-houses. It will be seen that the proposed arrangement of the estate provides only two-story buildings, with gardens in the rear, abutting on 45-ft. and 40-ft. streets, and a 45 deg. angle of light to all windows is in all cases more than provided for, the maximum height of the cottages being only 17 ft. to eaves, and the minimum space at the back and front being 38 ft. and 50 ft. respectively.

From these facts the Council will understand that the scheme which we have adopted for the development of the Totterdown-fields estate is one which can be thoroughly recommended on sanitary grounds. We have given instructions for the preparation of working drawings to be proceeded with for the portion—about one-third—of the estate nearest to Tooting High-road.

Clare Market, Strand, Scheme.

On February 12, 1901, the Council authorised us to advertise for tenders to be delivered to the Council on 26th inst. for the erection of the dwellings on the Duke's-court site, Drury-lane, for the accommodation of 610 persons of the working classes to be displaced by the carrying out of the Clare-market, Strand, scheme. We now submit the working drawings, bills of quantities, specification, and architect's estimate, amounting to 26,285*l.* in respect of the three blocks of dwellings, which will be known as Sheridan, Beaumont, and Fletcher buildings. . . . The dwellings will consist of three blocks of five-story dwellings, which will provide accommodation for 610 persons in 130 tenements; of these ten will be of one room, seventy-five of two rooms, thirty-five of three rooms, and ten of four rooms; 120 tenements will be entirely self-contained, and the remaining ten will have private water-closets, but sculleries common to two tenements. . . .

Lordship-lane Estate, Tottenham.

In accordance with the decision of the Council to acquire land under Part III. of the Housing of the Working Classes Act, 1890, with a view to providing accommodation for the working classes, we instructed the valuer in May, 1900, to search for suitable sites for the erection of working-class dwellings in the north and north-west districts outside the county boundary. Inquiries were accordingly made, with the result that an estate at Tottenham, consisting of about 225 acres, was brought to our notice. The estate consists of two detached portions, the larger portion fronting Lordship-lane and the smaller portion lying to the north of White Hart-lane. As the estate appeared to us to be a suitable one for the purposes of workmen's cottages, we instructed the architect to prepare a plan for its development. Upon the consideration of the plan submitted by the architect showing the development of a portion of the land, we instructed the valuer to communicate with the owners to ascertain the price at which they would sell a portion of the estate and alternatively the whole of the land. As a result of the negotiations with the owners' agent, we learnt that the owners would require a higher price per acre if the southern site only were purchased. . . . The valuer continued his negotiations with the agent, and ascertained that 400*l.* per acre would be accepted on condition that the whole of the estate of 225 acres were acquired by the Council.

The estate comprises, as before stated, about 225 acres, and is six miles distant from London. The southern or larger portion of about 179 acres has a frontage of a little over half a mile to Lordship-lane, which is a main thoroughfare from High-road, Tottenham, to Green-lanes, Wood Green. It has also a frontage at its north-west end to White Hart-lane of some 650 yards. The northern or smaller portion of the estate north of White Hart-lane, containing about 46 acres, is about 440 yards distant, is detached from the southern site, and is approached by a narrow road, 30 ft. wide, from White Hart-lane. The means of communication between the greater part of the estate and London are good. The Enfield branch of the Great Eastern Railway would serve the bulk of the estate on the east side, Bruce-grove and White Hart-lane stations being respectively 850 and 580 yards from the nearest point of the southern site, while White Hart-lane station is 730 yards from the nearest point on the northern site. From both of these stations there are five workmen's trains running daily between 4.50 and 6 o'clock a.m. to Liverpool-street at a return fare of 2d., while there are three others between 6.35 and 6.55 a.m. at a return fare of 3d. The extreme west of the southern site is best served by the Palace Gates branch of the Great Eastern Railway, Palace Gates and Green-lanes stations being respectively 1,430 and 1,460 yards distant from this point. There are at present no workmen's trains from these stations, but the Council has prepared a case against the company for a service of workmen's trains on this branch. Wood Green and Bowes Park stations on the Enfield branch of the Great Northern Railway are within 1,640 and 1,800 yards respectively of the western end of the southern site. From the former of these stations there are eight workmen's trains between 4.58 and 7.1 a.m., running to King's Cross and Moorgate at return fares of 3d. and 3½d. respectively, while from the latter five trains between 4.58 and 6.58 run to the same stations at return fares of 3½d. and 4d. In addition to the railway facilities, trams run along High-road, Tottenham, within 800 yards of the eastern end of the estate, communicating with Moorgate-street, London Docks and Euston-road at a fare of 3d. each way, and similarly along Green-lanes within 1,250 yards of the western end of the estate. The Middlesex County Council has also obtained powers to construct a light railway connecting the existing tramway at Bruce-grove, Tottenham, with that in Green-lanes, Wood Green, which will afford direct communication between the southern portion of the estate and these points. . . .

After careful consideration it appears to us that the northern site, which is less suitable for immediate development than the southern site, should not be dealt with until the southern site has been developed. The architect informs us that it could be developed to accommodate 2,460 persons in 1,029 cottages. The valuer also states that every house built and occupied on the southern site will tend to render the northern site not only more suitable for development, but also more valuable. The scheme of development, therefore, which we have had before us deals only with the southern site, comprising 179 acres. . . .

Accommodation for 33,000 persons will be provided in 4,750 self-contained two-story cottages, and 2,000 more will be provided for in tenements over shops. The cottages will be of various classes, and each cottage will have its own garden. The number of persons to be placed on the site will not crowd the land unduly. The depths of the various cottage plots will be generally greater than the by-laws of the local authorities require, and forecourts will in all cases be provided. The frontages to the main roads are very suitable for shops, and about 10½ acres of land will be given up to this purpose, upon which about 250 shops will be erected, and from these a considerable income could probably be obtained should the Council decide itself to build the shops. It will be necessary to widen Lordship-lane for the construction of the proposed tramway, and the shop plots have been made of sufficient depth to allow of this being done.

Access to the site will be given by eight roads leading from Lordship-lane, Snakes-lane, and Hatherley-road on the south, three from Church-lane on the east, eight from White Hart-lane on the north, and provision will be made upon the other boundaries for future continuation of the roads should opportunity arise. The principal roads providing thoroughfares over the site, both east and west and north and south, are 50 ft. wide, with trees on each side, and the majority of the remaining roads are 40 ft. wide, with the exception of those within the district of Wood Green, which are in all cases 50 ft. wide as required by the Urban District Council.

It is proposed to take advantage of the river Moselle, which runs through the eastern portion of the estate, and some slightly rising ground upon its bank, which is difficult to build on, to arrange a public garden of about 2¼ acres, with the river flowing through it. Four other smaller gardens will be arranged on other parts of the site, which will help to preserve the healthiness of the estate. The parish church of Tottenham and the churchyard are very picturesque, and effective use will therefore be made of them in laying out the estate. The total accommodation that can be provided on both sites is 42,500 persons in 5,779 cottages.

The estimated cost of erecting the cottages on the south side only, providing the roads, gardens, sewers, diversion of the river Moselle, &c., and provision of shops is 1,530,858*l.* On the other hand, the estimated sum available after allowing for the cost of the land, interest and sinking fund charges and all outgoings is 1,521,800*l.*, or a deficiency of 9,058*l.* The difference represents only three-fifths per cent. on the total estimate. We may point out that 2 per cent. of the estimated gross rental has been set aside in the estimate under the heading of contingencies, and a very small saving under this heading will convert the deficiency into a surplus.

The Standing Order No. 336 (1)—(4) requiring that there shall be no charge on the county rate in respect of the erection of working-class dwellings applies only to schemes or areas dealt with under Parts I. and II. of the Housing of the Working Classes Act, 1890, and does not affect schemes under Part III. of the Act, but Standing Order 336 (5) relates to Part III. and only requires that the Finance Committee shall simultaneously report with us on the estimated financial effect of a Part III. scheme, and this will be done in the present instance. It may be mentioned that on December 6, 1898, the Council by resolution approved of action being taken under Part III. of the Act, pro-

vided that no charge be placed on the county rate thereby.

The amount of the estimate, which has been forwarded to the Finance Committee, and which the Council will be asked to approve, is 91,500*l.* This includes the value of the land, the agent's fee, and all expenses connected with the sale and purchase of the land. The sale of the estate is subject to the condition that the Council shall take over the land subject to the existing tenancies and tithe. The gross rental received from the agricultural tenants on the estate is stated to be 500*l.* per annum. The tithe and tithe rent charge amount to 65*l.* 17s. 11d. per annum normal, the value in 1899 being 43*l.* 19s. per annum."

The Committee recommend accordingly.

APPLICATIONS UNDER THE 1894 LONDON BUILDING ACT.

AT the meeting of the London County Council on Tuesday the following applications were considered. Those applications to which consent has been given are granted on certain conditions. Names of applicants are given in brackets. Buildings are new erections unless otherwise stated :—

Projection.

Bermondsey.—The retention of a pilaster on the flank wall of No. 193, Southwark Park-road, Bermondsey, abutting on St. James'-road (Mr. E. Crosse for Mr. W. H. Hobbs).—Consent.

Width of Way.

Bermondsey.—A two-story office building on the north-west side of Upper Russell-street, Bermondsey, at less than the prescribed distance from the centre of the street (Mr. J. A. Stayner for Messrs. Onley).—Consent.

Woolwich.†—A building at the rear of No. 1, Beresford-square, Woolwich, at less than the prescribed distance from the centre of Beresford-street (Mr. A. E. Parnell for Mr. M. Barnett).—Refused.

Lines of Frontage and Width of Way.

Kensington, North.—A block of studios on the site of Nos. 89 and 91, Ladbroke-road, Kensington, to abut upon Ladbroke-road and Boyne-terrace-mews (Mr. W. Flockhart for Mr. E. Davis).—Consent.

Formation of Streets.

Greenwich.—That an order be issued to Messrs. Beadel, Wood, & Co., sanctioning the formation or laying out of new streets for carriage traffic on the Eastcombe estate, Charlton-road, Greenwich, and in connexion therewith the widening of a portion of Charlton-road (for the Norwich Union Life Assurance Company). That the names Eastcombe-avenue, Wyndcliff - road, Sandtoft-road, Eversley - road, Bramshot-avenue, Sherington-road, Hopedale-road, and Mayhill-road be approved for the new streets.—Agreed.

Lewisham.—That an order be issued to Messrs. J. Edmondson & Son sanctioning the formation or laying out of six new streets for carriage traffic on the Old House estate, Sydenham-road, Sydenham, and in connexion therewith the widening of a portion of Mayow-road. That the names Bishopsthorpe-road, Queensthorpe-road, Earlsthorpe-road, Kingsthorpe-road, Princethorpe-road, and Dukethorpe-road be approved for the new streets.—Agreed.

Woolwich.—That the request of Mr. G. F. Logsdail for Mr. G. F. Jones, for an extension of the period within which the roadways of four new streets for carriage traffic, to be named respectively Cadwallon-road, Gerda-road, Thaxted-street, and Rushbrook-street, out of the south side of Southwood-road, New Eltham, were required to be clearly defined throughout by posts and rails, or so otherwise as the Council might permit, be granted.—Agreed.

Cubical Extent.

Lambeth, North.—A building to exceed in extent 250,000, but not 450,000 cubic feet, and to be used only for the purposes of a railway station, mortuary, chapel, and residence for officials, on the west side of Westminster-bridge-road, Lambeth, and abutting also on Newnham-terrace (Messrs. Perry & Co. for the London and South-Western Railway Company).—Consent.

Space at Rear.

Norwood.—A modification of the provisions of Section 41 of the Act with regard to open spaces about buildings, so far as relates to the proposed erection of a two-story addition at the rear of No. 78, Upper Tulse-hill, Norwood, with an irregular open space at the rear (Messrs. Crabb & Son for Mr. A. B. Passmore).—Consent.

Width of Way and Height of Building.

Holborn.—A chapel, shops and offices on a site on the east side of Southampton-row, Holborn, at less than the prescribed distance from the centre of Eagle-street, and to exceed in height the width of that street (Mr. A. Keen for the Baptist Union Corporation, Limited).—Consent.

The recommendation marked † is contrary to the view of the Local Authorities.

BOOKS RECEIVED.

BRICKLAYING. By Owen B. Maginnis.

PROCEEDINGS OF THE SECOND ANNUAL CONVENTION OF THE ARCHITECTURAL LEAGUE OF AMERICA. (R. R. Donnelley & Sons, Chicago.)

LIST OF R. H. S. CURVES, in complete set of twenty-three templates. By Professor R. H. Smith. (Cassell & Co.)

LLANDAFF CHURCH PLATE. By G. Eley Halliday, F.R.I.B.A. (Bemrose & Sons.)

Correspondence.

To the Editor of THE BUILDER.

HINTS ON STABLES.

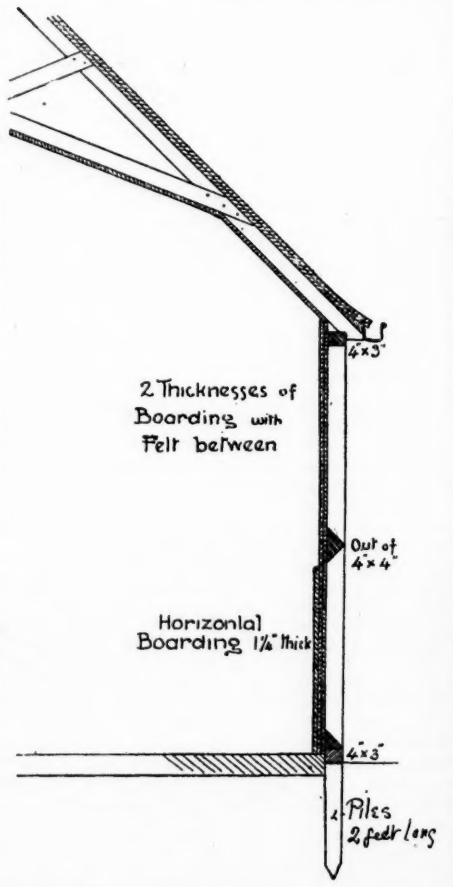
SIR,—While I agree with much that your contributor has written,* there are several points on which I differ from him.

Certainly ventilation is a most important and difficult point. I think fall-back windows—either iron or wood—with side hoppers, make the best inlets. Although I have used a large number of roof extractors, by at least four different manufacturers, I have found none completely satisfactory. Probably extracts near the floor of the stable, with flues carried to an upcast at one end or the centre of a range, with the draught helped by heat or a fan, would be the best.

I have not found that horses do best in stone-walled stables, and they are certainly dangerous if horses are put in before they are thoroughly dry; and they require an inside lining. Cement, I think, looks well if painted with enamel paint. Wood linings usually have a space behind at least the thickness of the grounds, in which mice and other vermin collect.

In brick stables blue Staffordshire bricks make a good dado, and are the best for division walls, as it is possible to get a fair face on both sides of a 9-in. wall. I like Aston Hall buff bricks above, as they are clean and free from gloss. Glazed bricks make a good dado for passages and washing-boxes, but are apt to get chipped in a loose-box.

To my mind, the best boxes for hunters are those built of wood, with tiled roofs. Horses nearly always do well in these, and they can be designed to look well. If fixed on piles they are tenants' fixtures—a great advantage to many hunting men. I have built a large number with the framing outside, the horizontal pieces being cut on the diagonal to throw off the rain (see sketch), with two thicknesses of ⅝-in. boarding, with inodorous felt between, nailed on the inside, and 1¾-in. kicking-boards, with rounded top as a dado, 3 ft. 6 in. high. The ⅝-in. boards are nailed vertically to break joint and the kicking-boards horizontally. The graining can be blacked and the panels coloured. I have also built them with match-boarding inside and weather-boarding on the outside, but do not consider them so strong, and the space between the boarding collects vermin.



* See *Builder* of February 16

There is usually no difficulty in keeping the drains outside the stables, but when it is necessary to have gullies inside, the outside end of the drain can be disconnected and have an air-inlet and an upcast shaft fixed at the head of the drain.

A loft over the stables is not good for hay and tends to block light and air from the yard, but it is convenient and often economical. A fodder store at the end of the passage, where there is one, is quite as convenient, but takes up space.

I like passages 7 ft. 6 in. wide, but I do not feel so sure about wide doors being an advantage. I think that a cart comes oftener to grief at a wide gateway than at a narrow one, and the same may apply to a stable door. Wide doors take a great deal of room in opening, unless they slide.* I have put 7 ft. 6 in. sliding doors to a racing stable, where I believe they answer well. For ordinary loose-box doors 4 ft. is a good width, but I prefer 4 ft. 6 in. or 5 ft. for brood-mares.

All angles should be well rounded about any stable. I do not like grooved bricks for floors. They are very bad to keep clean. Plain clinkers, or Buckley grey brick on edge make the best, but small paving stones laid in and flushed with cement make an excellent floor, and are largely used in Ireland, where good paving bricks are expensive. For fall I generally give 3 in. in the length of a box, which is enough for drainage. A horse looks best when standing slightly uphill, but I doubt if it is a natural position. A horse will choose that position at the covert side with a man on his back, but he usually stands back in a sloping stall, and I do not think he places his forelegs uphill when loose in a field with no weight on his back. I have even given less fall in both hunting and racing stables.

Twelve feet six inches by 10 ft. 6 in. is a good loose-box for a hunter. For racehorses I have found 13 ft. by 11 ft. 6 in. a good size.

I strongly object to wide stalls. A horse gets across them, and is more likely to get cast than in a 6-ft. stall. Large horses and cart-horses should have 6 ft. 6 in.

I prefer glazed earthenware mangers and water-pots to any other. Slate mangers are also good.

I have fitted a large number of boxes with water troughs supplied automatically by ball-tap cisterns at the end of each range. If desired, galvanised-iron lids can be fitted to fold down over the water to prevent the horse drinking, but personally I think it is very seldom that a horse will drink too much if a supply is always available, while there is a danger of his doing so if he only gets it occasionally.

Corrugated iron is not a good material for stables. It is hot and noisy, and reflects a great deal of heat into the yard, and does not last so long as wood and tiles. RICHARD T. BECKETT.

* Should they not always be made to slide?—ED.

WHITCHURCH ASYLUM COMPETITION.

SIR,—In regard to your remark that our plan covers more ground than the winning one, the winning design measures approximately 1,050 ft. by 750 ft. over the main buildings, ours measures 1,250 ft. by 550 ft., and is consequently a little more, not less, compact. Our two longest main corridors measure 650 ft., the two longest on the winning design 600 ft. and 700 ft. respectively.

As the planning of different sections of the ward blocks is different for the several sections of patients, we considered we were right in arranging them so that both in the smaller and larger schemes patients occupied wards planned for them instead of getting the smaller scheme, as in the winning design, by cutting out one entire class of patients and distributing most of the patients (in the smaller scheme) in buildings to be ultimately adapted for another class of patient. WILLS & ANDERSON.

CHIMNEY PIECE, AUDENARDE.

SIR,—At my second visit to Audenarde in 1887 I made a sketch and took several plans and measurements of the interesting *cheminée* in the Salle du Conseil, which appears in the *Builder* of February 23. In my drawing the date, 1529, occurs in the centre of the lintel, from which I gather that the Coat of Austria, surrounded by the *Toison d'Or*, as shown by Mr. Cotman, is a modern innovation. It certainly was not there in 1887, and the shield, be it noticed, is earlier in shape than those of the other four coats. I merely send these few words to show the addition, and not to criticise the drawing; indeed, with the heraldries re-coloured, it would be difficult to detect and detach the old from the new, and I only found it out by comparing Mr. Cotman's good sketch with my poor one.

I fancy the coat on the sinister end of the lintel is that of Luxemburg (not Burgundy). The spacing out indicates clearly that the arrangement as at present is unusual, and, as a composition, rather too crowded. E. SWINFEN HARRIS.

"AN ANCIENT LATCH."

SIR,—Referring to the interesting note and sketch of a Norfolk latch in your issue of last week, I may

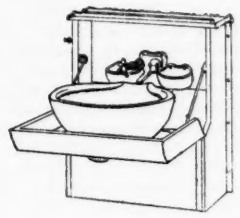


Fig. 1.

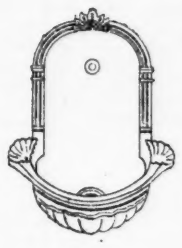


Fig. 2.

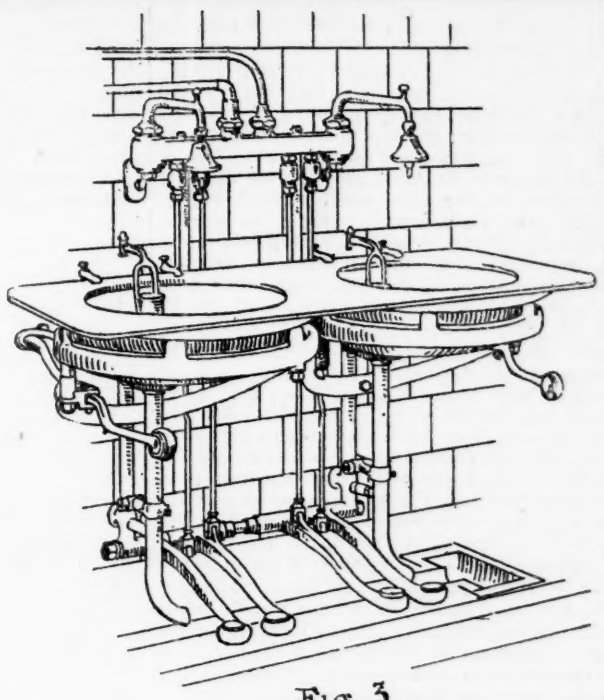


Fig. 3.

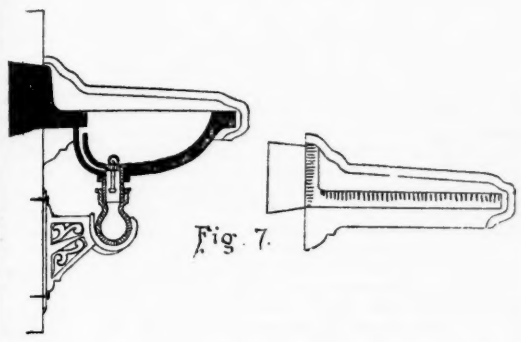


Fig. 7.

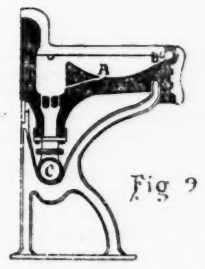


Fig. 9

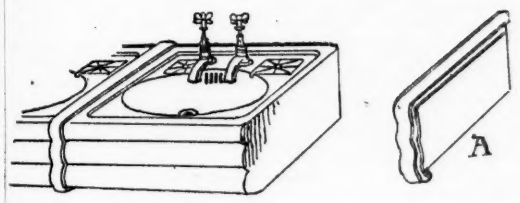


Fig. 4

Fig. 5.

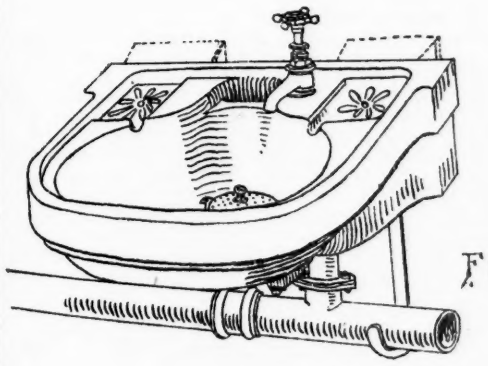


Fig 6

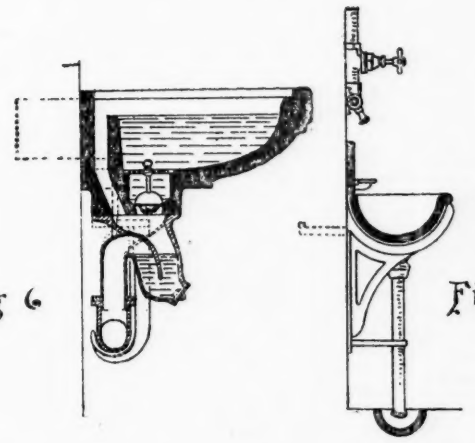


Fig. 8.

Illustrations to Student's Column.

be allowed to remark that I came across a similar form of latch in a farm house near Cardiff, when making a survey of dilapidations, just before Christmas last. This house was at least 100 years old.

H. L. HILEY.

The Student's Column.

SANITARY FITTINGS AND PLUMBING.

9.—LAVATORIES (*continued*).

THE prejudice against exposed lavatories and waste-pipes is now nearly dead, and the practice of supporting them on metal brackets or legs is rapidly increasing. We need not enter into the details of these supports, but may point out that elaborate scrollwork and ornamentation are quite out of place. The simpler the support is the better. For cheap fittings the brackets and frieze are generally of painted iron; sometimes the iron is vitreous-enamelled, but this is more expensive. The neatest arrangement we have seen consists of round nickel-plated brass brackets or legs with similar rails fixed horizontally a few inches below the slab to form towel-rails. Sometimes porcelain-enamelled fireclay legs are used; for the most expensive work marble brackets or legs are sometimes used in conjunction with marble friezes, tops, and skirtings.

Many persons, however, still prefer "cabinet lavatories," especially for dressing-rooms, but as the actual fittings do not differ materially from those already described, no illustrations need be given. A word of warning, however, should be uttered against certain combinations occasionally adopted. In one catalogue a tip-up lavatory is fixed over a *slop-sink*, the whole being inclosed in an elaborate piece of cabinet-work. The writer of a book on plumbing, published about half-a-dozen years ago, describes as "a very handy combination" a cabinet lavatory having a small urinal basin attached inside the door of the cupboard under the lavatory; the urinal is fixed close to the hanging stile of the door, and is connected to the waste-pipe with a swivel joint; the waste from the lavatory passes into the urinal basin, *when the cupboard door is shut*, but what happens when the urinal is brought forward by opening the door we are not told. Contrivances like these, however ingenious they may be, are simply abominations. Urine is one of the very foulest parts of domestic sewage, and ought to be kept as far away from lavatories as possible.

Among the adjuncts of domestic lavatories may be mentioned receptacles (generally of nickel-plated brass or other metallic compound) for sponge, soap, tumbler, &c., and it is a good plan to provide a receptacle for rings. This often takes the form of a small cup at the top of the brass fitting to which the upper end of the plug-chain is attached. The other receptacles are generally fixed to project from the marble or other skirting at the back of the basin.

Folding lavatories are often adopted in offices where exposed basins would be somewhat unsightly, and also in confined spaces such as the lavatory compartments of railway carriages and the state-rooms of ships. An example is given in fig. 1. They consist of a white earthenware or enamelled-iron basin fixed to the inside of a fall-down door. The basin has a projecting rim to prevent splashing, except at the back; on closing the door the contents are discharged over the back of the basin into a receiver below, which is fitted with a connexion for the waste-pipe. The taps and soap-dishes fit into the basin when the door is closed.

Small hand lavatories (fig. 2) are more frequently seen on the continent than in this country; the foul nature of our atmosphere compels us to adopt basins where a more

thorough ablution can be obtained than in these small fittings.

Surgical lavatories are now almost invariably made with treadle action, so that the hot and cold supplies and the waste can be operated by the foot or knee; this is a great convenience to the surgeon, and does away with the risk of contaminating the taps with foul or possibly infectious matter from the operator's hands. Fig. 3 shows a pair of the surgical lavatories, fitted by Shanks & Co., in the operating theatres of the Western Infirmary, Glasgow. The basins are of white vitro-porcelain, 1 ft. 6 in. in diameter, and fixed 2 ft. 2 in. from centre to centre on short vertical studs rising from circular cast-iron rims, the rims being carried by central back supports fixed clear of the wall. Every part of the frame-work can therefore be easily cleaned. The slabs are of glass ¾ in. thick, and are fitted with a patent catch arrangement so as to be removable and adjustable. The hot and cold supplies are actuated by treadles fitted with rubber pads. The gun-metal box fixed to the wall above the basins has inlets for hot and cold water, and a swivel arm at each end for douche and spray. The standing waste-and-overflow is actuated by a knee treadle fitted with rubber paid, and can be easily removed for cleaning. The waste-pipe is copper, held in position by a patent clutch, so that it can be removed for cleaning, and discharges into an open channel in the floor.

A modification of the supply arrangements consists in having a single treadle for both cold and hot supplies. A slight depression of the treadle opens the cold-water supply, and a further depression opens the hot-water supply, the hot and cold water being mixed in the gun-metal box before reaching the basin. This prevents the risk of scalding the hands or breaking fragile instruments.

"Constant-stream" lavatories are also made for surgical purposes. In these a constant stream of water is admitted in a series of jets from perforations in the front of the basin, the water being continuously discharged over a weir at the back (see fig. 9). After the valves are closed, the water in the basin drains away to the waste-pipes through a small hole in the bottom. The valves are actuated by treadles, and the hot and cold water passes through a mixing box before reaching the basin. With lavatories of this kind a waste treadle is not required.

Enamelled fireclay lavatories are largely adopted in schools and other places where they are likely to be subjected to rough usage. The ordinary basin (fig. 4) contains no special features. The overflow is formed in the fireclay, and the ends of adjacent slabs are either formed with plain butt-joints or with an enamelled fireclay joint-piece which overlaps as shown at A. Sections of two of these basins are given in fig. 5. These lavatories may be supported on glazed brick piers, enamelled fireclay pedestals, or iron brackets or standards. The sizes of the tops range from about 20 in. by 18 in. to 26 in. by 20 in. To facilitate the cleaning of the floors and walls, "corbel" lavatories are now made, having fireclay lugs for building into the walls. The example in fig. 6 is known as Shanks's "Projector"; it has a rounded front, a safety waste, and an improved overflow, and the glaze is continued under the basin. The sizes range from 18¾ in. by 15½ in. to 25 in. by 19½ in. Adams's "Helios" lavatory range (fig. 7) has fireclay brackets in addition.

"Constant-stream" lavatories are now largely used for schools and other public institutions. The great advantage they possess over the ordinary basins is that the water is constantly changing, and two or more children cannot therefore wash in the same water; this reduces the risk of spreading contagious or infectious diseases. A further advantage is that a great number of persons can wash in a short time, as no time is lost in waiting for the emptying of basins. A single tap can be fitted to a range, and this tap can be so arranged as to be under the sole control of the attendant. One of the simplest lavatories of this kind is the trough lavatory with sprays (fig. 8). The illustration shows Doulton's arrangement, the troughs being 40 in. long and 12 in. wide, supported on iron brackets. The waste-pipes are of glass-enamelled iron and discharge into a floor channel. The sprays are 20 in. apart.

Fig. 9 is a section of Shanks's "Instanter" lavatory, in which the water is admitted to the shallow basin through a series of perforations B in the front, and overflows over a weir at the back; a small hole A is provided for emptying the basin when the water is turned off. No plug or other waste fitting is required. The iron standards are arranged to carry a horizontal waste-pipe C, into which the water from each basin flows directly. For schools the slabs measure 18½ in. by 17¼ in., and for asylums 27¼ in. by 18½ in.

GENERAL BUILDING NEWS.

RE-OPENING OF ST. JOHN'S CHURCH, CHAPELTOWN, YORKSHIRE.—The Parish Church of St. John, Chapeltown, was re-opened on the 23rd ult. after undergoing enlargement. A new aisle has been added, a vestry and organ-chamber built, and the chancel extended. Mr. J. W. Sykes, of Hoyland, was the architect.

SWIMMING BATH, &C., BROAD-STREET, BLOOMSBURY.—Messrs. Clarkson have prepared plans and designs for the new swimming baths, &c., about to be erected upon a site in this street for the Metropolitan Borough of Holborn. The Guardians of the Poor for the Parishes of St. George, Bloomsbury, and St. Giles-in-the-Fields have adopted Mr. J. Gratton Izard's plans and designs for the Nurses' Home and Receiving House for Children which they are about to build in that same thoroughfare. In both cases the bills of quantities were prepared by Messrs. Gardiner & Theobald.

PROPOSED RECONSTRUCTION OF EMPIRE THEATRE, NEWCASTLE-ON-TYNE.—It is proposed to reconstruct this building according to plans by Mr. Frank Matcham, of London.

FISH MARKET, CARDIFF.—The new fish market at Cardiff was opened on the 19th ult. The building was designed by Mr. W. Harpur, the Borough Engineer.

PROPOSED HOSPITAL, KIRKBURTON, YORKSHIRE.—At a recent meeting of the Kirkburton Joint Isolation Hospital Committee, the Sites Sub-committee reported that Mr. Joe Berry, architect, Huddersfield, had been engaged to prepare plans, quantities, &c., for a hospital at Kirkburton. Mr. Berry's plans provide for an administration block of two stories, facing south. On the ground floor will be matron's, nurses', and doctor's rooms; kitchen, scullery, pantry, storeroom, and lavatory; a suite of discharging-rooms on the western side, consisting of undressing-room, bathroom, and dressing-room. On the first floor will be six bedrooms, a dressing-room, and bathroom. The outbuildings in connexion with the kitchen will be arranged on the northern side, and the tradesmen's entrance on the eastern side. It is proposed to build the ward pavilion practically on pillars, so as to allow a free circulation of air round and underneath the whole building, and it will provide accommodation for fourteen patients—eight in one ward and six in another. The entrance is to be in the centre of the building, and on the left of it is to be a clothes-store and pantry, and on the right a bath-room. Immediately opposite will be the ward kitchen, having two fixed windows allowing complete observation of the two wards. The isolation ward will contain accommodation in two wards for four patients, and there will be a ward kitchen in the centre. An open verandah will be built along the whole length of the building. Provision is made in the laundry block for wash-house, laundry, and drying closet, and there will be disinfecting rooms, ambulance stable, mortuary and view room, and coal, coke, and wood stores. The entrance lodge, one story high, will contain living room, scullery, and one bedroom, and will be provided with outbuildings behind.

CONSTITUTIONAL CLUB, WEST HARTLEPOOL.—It is proposed to erect a new Constitutional Club at West Hartlepool from plans prepared by Mr. J. J. Wilson. The cost of carrying out these plans is estimated at 8,000*l*. The ground floor will contain several suites of offices. On the first floor is shown billiard-room and clubrooms; and on the second floor a large hall and additional offices.

THEATRE, SOUTHSEA.—Plans of the new theatre to be erected in Elm-grove, Southsea, at the corner of Thicket-place, have been passed by the Roads and Works Committee. The theatre, upon which it is estimated 40,000*l*. will be spent, has been designed by Mr. W. G. R. Sprague. The site is situate about half way between Grove-road and Albert-road, and the building, which will have a frontage of 100 ft. to Elm-grove, and a depth of 160 ft., will be set well back from the roadway, and a covered porch in front will afford shelter to people waiting at the doors for admission. The house will comprise a pit and stalls on the basement level, a dress circle on the first tier, with raised balcony forming the second tier, above which will be placed the gallery. The specifications provide that the materials to be used in the building are stone, brick, and concrete, and the construction of the auditoriun, galleries, and roofs will be carried out in concrete and steel girders and joists. The elevation to Elm-grove will be carried out in stone or brick, with stone or cement dressings. The decoration of the auditorium and entrances are proposed to be executed in fibrous plaster and carton pierre in gold and colour. Saloons or lounges and retiring-rooms are planned for the different sections of the audiences. The seating accommodation is estimated approximately at 1,644, divided up as follows:—Stalls, 144; pit, 650; dress circle, 160; balcony, 192; gallery, 450; 16 private boxes (to hold three each), 48. The gangways in the theatre are to be 5 ft. in width.

SALTMEAD HALL, CARDIFF.—On the 13th ult. the memorial stones of the new Saltmead Hall of the Cardiff Forward Movement were laid. The new hall is situated at the corner of Hereford-street and Maitland-place, Grangetown, and has been erected from the designs of Messrs. J. P. Jones, Richards, and Budgen, architects. The building is capable of holding 737 people, not including the choir. The body of the hall is surrounded on three sides by galleries, while at the rear of the platform is a gallery for the choir, capable of seating forty-six people. The galleries are supported by cantilevers, and are approached by two stone staircases with direct access from the street, while the body of the hall has three doorways. Provision is made for ministers' and other retiring rooms, with lavatory accommodation. Owing to the unstable nature of the ground concrete pillars had to be built up from the marl 18 ft. below the ground level, the superstructure being wholly carried on arches and girders. The elevation is carried out in red brick with Bath stone mullions, &c., and the roof is of American green slates. The interior woodwork is stained and varnished dark and light oak, and the ironwork painted a soft green. The contract for carrying-out the work was 1,938*l*., exclusive of seating, the contractors being Messrs. Handford & Elsworthy, Cardiff.

NEW THEATRE, COLCHESTER.—At a meeting of the Council at Colchester on February 20, plans for the new Theatre Royal, which is to be erected on the site of the present theatre in St. Botolph's-street, for Mr. Chas. Macdona, were submitted and approved. The plans have been prepared by Mr. John P. Briggs, of London. The theatre will be fireproof throughout, and the entire house will be fitted with electric light. The whole of the auditorium, entrances, saloons, dressing-rooms, &c., will be heated by hot-water pipes and radiators, and the ventilation will be carried out on scientific lines. It is hoped to have the alterations completed by the autumn.

FOREIGN.

FRANCE.—Varnishing day for the New Salon will be on April 21, that of the Old Salon on April 30. ——The pavilion which was erected for the works of Rodin in the square De l'Alma, adjoining the great exhibition, is to be re-erected at Passy.——M. Saint-Marceaux has just completed the monument to President Faure, which is to be placed in Père la Chaise cemetery. The monument consists of a sarcophagus, on which is a recumbent figure in bronze of the late President, round which are draped the Russian and French flags.——MM. Allain and Heubès, architects, have been commissioned to rebuild the School of Physics and Industrial Chemistry. The cost is estimated at nearly 2,000,000 fr.——M. Fleury has been elected President of the Society of Architects of the Seine-et-Oise for 1901. M. Tendron has been elected President of the Society of Architects of Anjou. ——A building is to be erected for the Municipality of Auray (Morbihan) which is to contain a hospital for invalids, and an asylum for the aged.——The Municipality of Paris will next month take official possession of the smaller art palace on the Champs Elysées.——In the new Mairie at Suresnes three allegorical ceiling paintings are to be placed in position shortly, executed by M. Michel Lançon; also two landscapes by M. Jules Ferry, representing views taken in that part of the suburban district. ——A certain number of the inhabitants of Toulouse have entered a protest against the intention of the Municipality of that town to place in a public garden the relief by M. Injalbert, "Faunesses et Satyres," left to the town by a private owner, under the pretext that this work is of a "nudité inconvenante." ——The Municipal Council of Blois has entered an energetic protest against the intention of the city of Paris to take a part of the waters of the Loiret to complete the Paris drinking water supply.——M. Jacquet has been elected President for 1901 of the Architectural Union of Lyons.——The Municipal Council of Marseilles has voted a sum of 25 million francs for the improvement of the old quarters of the city in the rear of the Bourse.

MESSRS. KIRK & RANDALL V. THE METROPOLITAN ASYLUMS BOARD.—We understand that the claim of Messrs. Kirk & Randall against the Metropolitan Asylums Board for damages under their contract for the erection of a fever hospital at Tooting, involving a sum of 41,175*l*., has been terminated by the withdrawal of the plaintiffs' claim on condition that costs were not claimed by the Board.

BARRY RAILWAY VIADUCT, TAFF VALLEY.—The permanent way has been laid over the railway viaduct across the Taff Valley at Taff's Well. The viaduct connects the Barry system with the Rhymney system, and crosses two roads, two railways, the river Taff, and the Glamorganshire canal. The structure consists of seven spans, the highest point from ground to parapet being 112 ft. The total length is 1,420 ft. The viaduct was designed by Sir John Wolfe Barry, the contractors having been Messrs. Price & Wills, of Westminster.

MISCELLANEOUS.

PROFESSIONAL AND BUSINESS ANNOUNCEMENTS.—Mr. Samuel Knight, architect, of 175 and 176, The Temple Chambers, Tudor-street, E.C., has taken into partnership Mr. C. E. Lancaster Parkinson. Mr. Parkinson, for a considerable recent period, has been engaged as an official in the Architects Department of the London County Council. The style of the firm will be "Samuel Knight and Parkinson."——Messrs. Greaves, Bull, and Lakin, of Warwick, dealers in limes and cements, have converted their business into a limited Company under the title "Greaves, Bull, & Lakin, Limited," and have removed their head office from Warwick to their works at Harbury, the postal address being "Harbury, Leamington."

NOTTINGHAM MASTER BUILDERS' ASSOCIATION.—The annual dinner of the members of the Nottingham Master Builders' Association was held on the 22nd ult., Mr. H. Vickers presiding. The loyal toast having been honoured, Mr. Price proposed "The Mayor and Corporation of Nottingham," and coupled the toast with the names of the Sheriff and Councillor J. Wright.—The Sheriff, in reply, observed that the Corporation as a whole had during the past twenty or thirty years been setting themselves the task of improving the town in many respects, and it could not be denied that their efforts had to a great extent been successful. Councillor Wright also responded. In submitting "Success to the Nottingham Builders' Association," Mr. J. W. Woodsend remarked that the Association had had a fair amount of success, but they would all like it to have more. Such associations were very necessary, because without them builders would be to a great extent at the mercy of the trades-unions. In self-defence, therefore, they were practically obliged to come together. But they did not want to band themselves together with the sole idea of defensive tactics: it was proper for them to be associated if only for the opportunity of having such enjoyable evenings as that.—The toast was acknowledged by Mr. F. H. Fish, who said the builders were never in a better form for dealing with the men, and the relations between employers and employed were never better. Up to the end of last year they were very much troubled with the plastering section of the trade, but through the instrumentality of that association, which formed a committee to deal with the matter, they were enabled to get a very good settlement with the men.—Mr. James Wright submitted the toast of the "National Federation and Kindred Associations," and in doing so said their Association was connected with one of the most ancient and important trades in existence—a trade which paid over sixty millions of pounds in wages per year. He urged the Association to continue connexion with the National Federation. The Midland Branch of the National Federation was an attempt to unite and weld into one body all the master builders' associations of the Midland counties. There were many interests to guard against and many rights to defend of necessity in such a great and important industry as the building trade, not only in regard to their relationship with workmen, but also with regard to their relationship with architects, great public bodies, and the public at large for whom they worked. The National Federation had now in hand, and had had in hand for many years, with the Institute of British Architects, the drawing up and forming of a national and recognised form of contract which, when it was complete, would be satisfactory to all parties. During the past year this had been under discussion by the Midland Federation, and a form of estimate had also been under consideration. The Midland Federation had had a prosperous year, and new builders' associations had been started in many towns where such organisations had not previously existed. The speaker urged those present to support the associations financially; it was due from them as employers that they should make some sacrifice to protect their own interests and for the general welfare of the trade. In reply, Mr. A. Chambers said they seemed to lose sight to a very great extent of one of the greatest objects of their federation, and this was organisation. It had been said that they were not only formed for defence, but the latter was undoubtedly a very good object, and if they were desirous of peace they must be prepared for war. He hoped the time was not far distant when they would have the benefit of a national form of contract—one in which they could place reliance.—Mr. J. B. Alliott also responded, and remarked that the necessity for being united was very much greater among the employers than among the workmen. Mr. J. H. Vickers proposed "The Visitors," Mr. John Sulley suitably replying. The health of "The Chairman" was submitted by Mr. W. Edgar and duly responded to.

LONDON COUNTY COUNCIL ELECTION.—The list of nominations made in this election includes the following candidates:—Mr. L. Sharp (Brixton), Mr. J. E. Sears (North Hackney), Mr. R. Williams (North Lambeth), Mr. C. Fitzroy Doll (South St. Pancras), Mr. T. W. Emden (Strand), and Mr. W. Hunt (Wandsworth), architects; Mr. J. Ellis (Greenwich), Mr. W. Goodman (West Islington), and Mr. C. Angell (North Lambeth), builders; Mr C. G. Paddon (South Paddington), sanitary engineer; Mr. J. A. Baker (East Finsbury), Mr. J. Richmond (North Hackney), Mr. W. C. Parkinson (North Islington), engineers; Mr. H. R. Taylor (North Camberwell), bricklayer; Mr. J. Jeffrey (Chelsea), Mr. J. A. Thornhill (Dulwich), Mr. G. H. Booth (Mile End), and Mr. T. B. Westacott (West St. Pancras), surveyors; Mr. T. P. Gaskell (Clapham) and Mr. H. Ward (Hoxton), civil engineers; Mr. S. Collins (Kennington), stone merchant; Mr. J. Williams (North Lambeth), timber merchant.

GLASGOW ARCHITECTURAL CRAFTSMEN'S SOCIETY.—At the usual meeting of the society, held on the 23rd ult., Mr. John G. Dunn read a paper on the "Practice of Chimney Stalk and Boiler Building." To ensure the stability of a stalk, he said, the foundations must be built with best Portland cement, with footings projecting the thickness of the wall, or inverted arches used. The stalk should have a square base, a batter of ¼-in. to the foot, with hoop iron horizontal ties. The brick courses should be at right angles to the batter, and no port holes cut after the stalk had taken its bearing. Further remarks were made on the subject of efficiency of draught and architectural treatment, and then the lecturer passed on to the consideration of boiler setting, explaining carefully the various types of flues, boilers, and fuel economisers, the entire paper being of a most practical nature.

NATIONAL FEDERATION OF BUILDING EMPLOYERS.—We learn that Mr. A. Krauss, builder and contractor of Bristol, has been unanimously elected President of the National Federation of Building Employers of the United Kingdom.

FIRE AT PARISH CHURCH, STURTON, NOTTINGHAMSHIRE.—The Parish Church of St. Peter's, Sturton, was practically destroyed by fire on the morning of the 24th ult. The edifice was gutted, only the outside walls and the tower remaining.

BUILDING TRADES EXHIBITION.—At the forthcoming Building Trades Exhibition one feature will be a special exhibition to be called "The Surveyor" exhibition, illustrating everything in connexion with house drainage, sewerage, sewage disposal, and road-making materials and appliances. The exhibition will include drawings representing old defective and modern improved systems of drainage; models of sections of drainage badly laid and well laid for comparison, photographs of bad drainage work taken on the spot; also "photographs of eminent sanitarians who have insisted on the essentials of sound drainage." There will also be a varied exhibition of sanitary fittings and drainage and road materials.

DRAINAGE OF CHELSEA WORKHOUSE.—The Guardians of the Poor have instructed Mr. Chas. E. Gritton, A.M. Inst. C.E., of London and Selhurst, to prepare a scheme for the drainage of Chelsea Workhouse for the approval of the Local Government Board.

CAPITAL AND LABOUR.

THE NORTHERN BRICKLAYERS' DISPUTE.—We read that the bricklayers and labourers in Newcastle and Gateshead returned to work on the 25th ult., after a cessation of labour for about eight months.

ABERDEEN PLASTERERS' STRIKE.—The majority of the operative plasterers in Aberdeen struck work on the 25th ult. against a reduction of wages from 8½d. to 7½ an hour. Messrs. James Bannochie & Sons, the principal firm in the trade, and another employer have agreed to continue the present rate of wages, and as work is plentiful meantime it is not anticipated that the strike will be long continued. A meeting of the men affected by the dispute was held on the 25th ult., when arrangements were made for carrying on the strike. During the time they are idle the operatives will be in receipt of 27s. a week each, the whole of them being connected with two trades-unions. The masters regard the present rate of pay as excessive, and express determination to resist the demands of the men.—*Glasgow Herald.*

LEGAL.

IMPORTANT POINT AFFECTING ARCHITECTS.

THE cases of J. T. Chambers *v.* Harrop Goldthorpe, and Restell and others *v.* Nye came before the Court of Appeal, composed of the Master of the Rolls and Lords Justices Collins and Romer, on the 26th and 27th ults. As the same point practically was raised by both appeals, they were heard together.

The case of Chambers *v.* Goldthorpe came before the Court on the appeal of the defendant from the judgment of a Divisional Court composed of Justices Channell and Bucknill. This was an action brought by Mr. J. T. Chambers, an architect, for fees. The defendant employed the plaintiff to prepare plans for buildings he was then about to erect, and to superintend and measure up the work. The work was done by a contractor. The contract between the defendant and the contractor provided by Clause 20 that "a certificate of the architect or an award of the referee hereinafter referred to, as the case may be, showing the final balance due or payable to the contractor, is to be conclusive evidence of the works having been duly completed, and that the contractor is entitled to receive payment of the final balance." Clause 22 provided that in case of any question, dispute, or difference arising between the proprietor, or the architect on his behalf, and the contractor as to the various matters therein specified arising under or out of the contract, including questions "as to the works having been duly completed," or in case the contractor should be dissatisfied with any certificate of the architect under certain clauses of the contract, "or in case he (the architect) shall withhold or not give any certificate to which the contractor may be entitled, then such question, dispute, or difference, or such certificate, or the value of the matter which should be certified, as the case may be, is to be from time to time referred to arbitration." It seemed that the plaintiff had incorrectly measured up certain of the materials used, the result being that the amount of the certificate was larger than it ought to have been. The defendant admitted the plaintiff's claim, but counterclaimed for damages and negligence. The County Court Judge of Holmfirth gave judgement for the plaintiff on the claim and for the defendant on the counterclaim, and from this decision the plaintiff appealed to the Divisional Court, which held that the plaintiff under the contract was acting in a judicial position, and therefore that no action would lie for negligence apart from fraudulent or dishonest conduct. From this decision the defendant now appealed.

Mr. Lowenthal, for the appellant (defendant), contended that in the circumstances the plaintiff as architect was liable, because in measuring up the quantities he was acting as the servant of the defendant and not as an arbitrator. His contention also was that under the terms of the contract between the defendant and the builder the plaintiff was never employed in any sense as arbitrator between them.

Mr. Scott Fox, K.C., for the respondent (paintiff), contended that his client acted as arbitrator under the contract, and that so long as he acted honestly he was not liable to an action for damages for want of skill.

Their lordships reserved judgment in this case until the next case was heard.

The case of Restell and others *v.* Nye came before the Court on the plaintiffs' appeal from the judgment of Mr. Justice Matthew in the King's Bench Division.

This was an action against an architect, in which the plaintiff sought to recover money—alleged to have been received by the defendant to the plaintiff's use—also damages for the defendant's negligence. The defendant was employed by the plaintiff as architect in connexion with the building of a bungalow for the plaintiff in Sussex. The terms of the employment of the defendant were contained in certain letters which passed between the parties, from which it appeared that the defendant was to be paid by the plaintiff for "plans, specifications, and supervision of works," 5 per cent. upon the amount of the expenditure, travelling and out-of-pocket expenses to be charged extra. In accepting the defendant's offer the plaintiff wrote that the charge was to be an inclusive charge, covering everything. The defendant entered upon the work. He prepared a specification on which tenders were obtained, and included therein a provision that surveyor's charges for bill of quantities should be 2½ per cent. on the amount of the estimate, and for drawings, &c, 10*l.* 10s. The defendant prepared a bill of quantities and obtained a tender from some builders at Brighton for the erection of the bungalow for 1,790*l.* This tender was accepted, and a contract was signed by the plaintiff which provided that the price should be paid by instalments upon the defendant's certificates, and that his final certificate should be conclusive evidence that the builders were entitled to receive payment of the final balance. The work was completed, and the plaintiff paid the contract price, together with the cost of certain extras on the defendant's certificates. The defendant was paid by the builders 2½ per cent. on the contract price for taking out the quantities, and the ten guineas for the drawings. The plaintiff alleged that the receipt of these payments by the defendant was a breach of the defendant's term of employment, and was alternatively a secret profit made by the defendant in the course of his employment. The defendant contended that the ordinary course of business had been followed, and that the plaintiff was fully aware that the cost of taking out the quantities was not included in the defendant's charges for acting as architect to the work. The plaintiff's second head of claim was for damages for negligence on the part of the defendant. The plaintiff's case was that the defendant had omitted to check the builder's accounts with due skill and diligence, and had passed as extras works included in the contract, and had certified for sums improperly passed. The defendant denied these allegations. The plaintiff had died since the action was commenced, and the executors were substituted as plaintiffs. Mr. Justice Mathew held that the agreement between the plaintiff and the defendant did not cover the cost of taking out the quantities, but his Lordship felt compelled to add that he did not think the defendant had acted as an honourable man, because he had concealed from the plaintiff the fact that he was making this arrangement with regard to

the quantities. His Lordship said he was of opinion that the defendant had not held the scales impartially, and had been guilty of negligence which had benefited the builder at the expense of the plaintiff, but he was clearly of opinion that damages were not recoverable by the plaintiff in the circumstances. His Lordship therefore gave judgment for the defendant, but without costs. Hence the present appeal of the plaintiff.

Mr. Bray, K.C., and Mr. E. Morten appeared for the appellant (plaintiff), and Mr. Boxall and Sir Lennox Napier for the respondent (defendant).

The Master of the Rolls in giving judgment in both cases dealt first with the case of Chambers *v.* Goldthorpe. He said the only question raised by the appeal was one which arose on the counterclaim, and was whether Mr. Chambers was placed in the position of an arbitrator, or whether he was merely in the position of a person acting as agent of the building owner. If he was an arbitrator, then the building owner could not sue him for negligence; he could only sue him for fraud or collusion, and there was no suggestion in this case of anything of the kind. When they looked at the building contract it was plain that under many of the clauses of the contract Mr. Chambers was only to act as agent for Goldthorpe. In those clauses his duty was simply to look after the interests of Goldthorpe, and in respect of those matters no doubt he would be liable to an action for negligence. But when they came to Clause 20 the question arose, did the architect still remain the agent of the building owner, or was he not an arbitrator? It seemed, said his Lordship, impossible to say that with regard to Clause 20 the architect's sole duty was to look after the interests of the building owner. The architect undertook the duty of bringing out a final certificate, and with respect to that he owed a duty to the builder as well as the building owner, his duty being to hold the balance fairly between the one and the other. He therefore came to the conclusion that Mr. Chambers was in the position of an arbitrator, and that the counterclaim could not be maintained, and that the appeal must be dismissed. For the same reason he thought that the claim in the other case, "Restell *v.* Nye," could not be maintained, and that the appeal in that case should also be dismissed.

Lord Justice Collins concurred in thinking that the architect in each case was in the position of a *quasi* arbitrator, and that both appeals should be dismissed.

Lord Justice Romer dissented. He thought that if a person undertook for reward to value or estimate for another work to be done for his principal by a third person, he did not, so far as his principal was concerned, become in the position of an arbitrator in regard to his valuation or estimate merely because he knew that his principal and the third person had by contract between them agreed that, in default of dispute previously arising with regard to the matter, his valuation or estimate was to be taken as conclusive and as determining the price to be paid by his principal for the work to be done by the third person. Acting, as he would do, for his principal, if he was guilty of negligence causing damage he would be liable to his principal in an action brought by him. He therefore thought that the appeals in both cases ought to be allowed.

By a majority of the Court, therefore, both appeals were dismissed.

ACTION BY AN ARCHITECT.

ON the 20th ult., at Darlington County Court, before Judge Templer, Mr. William Perkins, architect, Bishop Auckland, sued Messrs. Sykes & Co., ironmongers, Darlington, for repayment of 33*l.* paid by him in error of account. Mr. Luck, barrister, instructed by Messrs. Main & Co., solicitors, was for plaintiff, and Mr. Edward Wooler for defendants. The plaintiff's case, as stated, was that he was the architect for thirteen houses at Etherley-lane. Prior to that an arrangement existed with defendants by which he was to obtain some share of profits from business he introduced. He had paid defendants sundry cheques on account, but found they had debited him with 33*l.* for gasfittings for these houses. He (plaintiff) did not order the fittings. Defendants should have looked to the contractor, Mr. T. Hilton, for the money. Defendants made a counter-claim for 89*l.* 7s., and it was urged by Mr. Wooler that plaintiff could not claim the money even were it due, but the Co-operative Society, who had the houses built. It was further held that 200*l.* was paid by Hilton, the builder, and that the 33*l.* should come out of that.—The case lasted a considerable time. The Judge decided in favour of the plaintiff, giving judgment for 33*l.* on the claim, and he also gave a verdict for plaintiff on the counter-claim.—*Newcastle Chronicle.*

WHAT IS A SCAFFOLDING?

AT the Halifax County Court on the 21st ult., before Mr. Vincent Thompson, Assistant Judge, a claim under the Workmen's Compensation Act was heard. The claimant was Mrs. Harriet Hodson, of Back Raglan-street, Halifax, and she sought to recover damages amounting to 266*l.* in respect of an accident which befel her husband, Charles Hodson, on September 11 last. The defendant was John Riley, plumber, Stainland-road, West Vale. Mr. W. H. Boocock appeared for the applicant, and Mr. F. C. Reed (Learoyd & Co., Huddersfield) for the defendant. The facts of the case, as stated by Mr. Boocock and deposed to by witnesses, were that Hodson, who only entered Riley's employ on the day of the accident as a journeyman plumber, was engaged in fixing new skylights in Brigg-royd Mill. Two ladders were used to get to the roof from the interior of the mill. The deceased fell from a platform between these ladders a distance of some 17 ft., fractured the base of his skull, sustained other injuries, and died the next day. The defence was that the platform on which the deceased was standing was not scaffolding within the meaning of the Act.—After hearing arguments on both sides, the Judge decided that the platform was not a "scaffolding," and gave a verdict for the defendant. He expressed sympathy with the widow. Mr. Reed said he did not ask for costs.—*Bradford Observer.*

RECENT PATENTS:

ABSTRACTS OF PATENTED INVENTIONS.

21,336.—METAL LATHING: *M. Hillon.* — The laths are made out of strips of sheet-metal, and to enable them to "key" with the plaster as well as to stand out from the joists they are punched so as to present loops or tongues, which may be curved, angular, or rectangular in shape, and be set parallel to the sides of the strips or at an angle with them. The machine which bends and shears the rectangular tongues has two lifting-bars which sever the strip from the lower die and are joined to the upper die crosshead with rods and a crossbar. With the specification should be read No. 10,664 of 1899.

21,338. — METERS FOR GAS AND LIQUIDS: *H. Jensen.*—With the fixed walls of the meters are combined bellows of which the membrane has on one side, or both, a central solid plate surrounded with solid rings in order to leave narrow spaces or strips of the flexible material between them, the rings and the plate being joined to one another and to the walls of the meter by means of lever-links.

21,353.—SOUND-PROOF AND FIRE-PROOF FLOORS AND CEILINGS: *P. Hobbs.*—About the lower flanges of the metal joists are arranged hollow flanged skew-backs made of concrete, cement, terra-cotta, &c.; upon the flanges of the latter are dropped rabbetted ceiling-slabs, whilst upon their upper edges are laid metal sheets which may be grooved, corrugated, or expanded in shape; then above the metal network, or sheets, and round about the upper flanges of the joists is laid a mass of concrete, a coating of plaster being applied underneath the slabs; for the ceiling plaster the lower flanges of the skew-backs are grooved dovetail-wise, and by another method the concrete skew-backs may be cast about the joists when *in situ.*

21,356.—A CONTRIVANCE FOR WEIGHING MACHINES: *J. W. Cartwright.*—In the case of scales that indicate fractional parts of, say, a pound after the required weight to the nearest pound has been put into the weights' pan, a vertical arm is mounted upon the beam, and at its lower end is a weight that will oscillate within a dash-pot and is joined with a strap to a drum on which is mounted a pointer travelling over a graduated scale above the beam; upon the vertical arm slides a weight for adjustment, which may be altered in respect of both its weight and place.

21,366.—A METHOD OF VENTILATION: *W. Birch.*—The appliance is for the withdrawal of polluted air by the operation of a gas-burner or furnace which is placed at the bottom of a shaft with which the ducts for foul air from the room are connected. In one form of the invention, and adapted for buildings, the foul air, as it flows through openings in the wall and ceiling of the room, is carried through flues to a shaft wherein a gas-burner is placed; in some instances the burner is arranged concentrically within a tube and eccentrically within the casing.

21,381.—A SAW GUIDE FOR MITERING MACHINES: *P. F. MacDonald.*—The saw guide is mounted so that one can set it at any angle about two axes, which are disposed at a right angle to one another, and is carried by a vertical standard which is joined with a ball-and-cup bearing to the table or base-board. The post or standard can, moreover, be set at any angle in the vertical plane as one turns it between two plates set at an angle of 90 deg. to the base-board.

21,401.—CLAMPS FOR JOINERS' USE: *G. Schmidt.*—The inventor's object is to enable one to clamp pieces of wood together at varying angles during the process of glueing; the jaws of the clamp are pivotted to two arms which are pivotted on to a boss between them, which has lugs that guide the arms and is screw-threaded that it may take a screw, at one end of which is a pivotted jaw and at the outer end a handle; a right-and-left-handed screw serves to draw together the two arms for closing the jaw of the clamp. In another mode an eccentric, with a handle, is used for the adjustment of the arms, the eccentric being pivotted to links which are pivotted on to one of the arms and being caused to bear against the other arm, which a hook that is in engagement with a slot retains in its position to support the thrust; the eccentric, when adjusted, is maintained in place by means of a pawl, which engages with ratchet teeth upon the eccentric.

21,409.—A SELF-CLOSING VALVE: *S. Kapralik.*—A conical valve shuts the casing at its inlet side, and at a point midway a valve spindle closes it also, a groove cut in the valve spindle permits the current of liquid to the outlet when the valve has been forced inwards and the inlet end has, at the same time, been opened; either a spring or the pressure of the liquid will serve to force the valve against its seating.

21,411.—AN EXTINCTEUR: *F. S. Bright.*—The cylinder-shaped container of metal has a lid which makes an air-tight joint, being screwed on with packing, and to the middle of the lid is screwed the nozzle of the discharge-pipe, at the lower end of which, within the vessel, is screwed a strainer. At the side of the casing is a cage or holder for the acid-bottle, against the side of which is a thumb-screw which, when turned from without, will break the bottle.

21,413.—ELECTRICAL CUT-OUTS: *F. Sachs.*—For cut-outs with a fuse, which is placed inside a casing, a second fine wire is laid outside the casing, which will answer the purpose of an indicator through its own fusing when the main fuse blows, the pin terminals should be passed through an end piece of the tube-shaped casing, and the auxiliary fuse may be made of a strip of foil upon asbestos paper or some similar material.

21,427.—AN APPARATUS FOR PAINTERS' USE: *G. E. Holloway and Dellanga & Co.*—For purposes of paint-spraying the inventors cause compressed air to be forced through a tube, together with paint through the tail-ends of other tubes, into the spraying-nozzles upon a straightened or bent tube, which is to be rocked with the hand or with a lever; the tail-ends of the supply tubes are dipped either into the paint in the reservoir or into a vessel upon the shaft which dips into the paint, and will serve to stir up the paint.

21,439.—FLUSHING CLOSETS AND THEIR FITTINGS: *A. Male and F. Hodgson.*—For a float-valve in the inlet of the cistern, which is made air-tight, the inventors substitute an air valve, which is regulated with a float, and will prevent the entry of water just as it prevents the escape of air. In one modification of the apparatus the cistern is divided into two portions by an inner wall. The connection from one part to the other is regulated with a valve. The closing of the valve upon the opening of the discharge valve, together with the reversal of that action, provide a reserved flush. The principle involved may be adapted for a siphonical discharge cistern, and for a single valve cistern also.

21,493.—BALL-AND-FLOAT VALVES: *F. F. Brazier.*—The float is arranged so that it shall slide in a vertical direction between guides upon the end of the outlet pipe, whilst levers which are pivotted on to a casing at the end of the pipe join the float to a lug that projects from beneath the valve; by those means the movement of the float is communicated, to a lessened extent, to the valve which is seated upon the outlet of the pipe. In a variant adaptation a partial or entire balancing of the valve is effected by extending the valve downwards in order that the lower end may operate as a piston in a corresponding extension of the casing into which the water flows through a port within the valve.

21,530. — LADDERS, STEP-LADDERS, AND TRESTLES: *A. Barr.*—The three sections of a telescopical ladder are fixed with weighted hooks when it is fully extended, the hooks being pivotted on to the upper two sections and fitting over the rungs of the lowest section; anti-friction rollers press against the wall, and the sections are retained in their places with guide-rollers. For a trestle or step-ladder in two sections the sides are pierced with holes through which side-struts are to be hooked, and there are holes in the sections for a hinge-pin or bolt; a horizontal notched bar that engages with the rungs fastens the sections when they are extended; the ladders, &c., being after the convertible and extensible kind, are such as are specified in No. 24,183 of 1896.

21,537. — STEELYARDS: *W. E. Hipkins.*—The steelyard is adapted for use with weighing-bridges and platform machines, and embodies a compound-lever adjustment; to the steelyard is secured a notched bar, which is engaged by a supplementary nib mounted upon the poise. Any damage of the steelyard by the nib is obviated by cutting the notches upon the auxiliary bar more deeply than the notches upon the steelyard itself. Nor will the steelyard suffer injury when both nibs are in position for engagement with their notches respectively.

21,683. — AN APPLIANCE FOR SCOURING AND CLEANING PIPES AND CONDUITS: *F. Novotny and O. Mierisch.*—For a guide and piston an oval-shaped body is put within the pipe or conduit; a scraping instrument and a brush are attached to the guiding portion, the teeth or ribs of the scraper being set at an angle to the longer diameter of the appliance in order that it may rotate as it is drawn through the pipe; the brush sweeps away the dirt, &c., which the scraper removes as the apparatus is being forced through the pipe by means of compressed steam or other fluid.

21,710.—PROCESS OF MOULDING SINKS, &c.: *F. Wootton and F. Parker.*—A loose ring or mould is

mounted upon the die or mouthpiece of a pipe-making or extrusion machine, and reposes upon bevelled ribs of the balanced table, which also carry a core that is secured to a rod. After the table has been freed from its locked position, and as it descends, the suspension bolts limit the amount of the fall of the mould, so that a cutting-off wire can be drawn between the mould and the die. If it be desired to form ornamental designs around the sink or other article, loose pattern-plates should be inserted at the sides of the mould.

21,746.—COVERS FOR MANHOLES: *T. P. Greger.*—A flange which has gates arranged at regular intervals affords support for a circular grating; in the rim of the cover are fashioned half-rounded recesses which will, or will not, register (as may be desired for purposes of ventilation) with the gates in the flange, as a projection engages with one or with the other of two other recesses.

21,779.—MANUFACTURE OF LIME CEMENT: *C. Straub.*—Moisture is expelled from calcined limestone that has been partly hydrated by heating it in an oven or upon a hot plate. The broken lumps of limestone are then pulverised, and the resultant lime cement will serve for plaster or cement, or, when it is mixed with sand, for mortar. When finely sifted and compounded with a colouring material, it may be used as a wall paint. Steam or water can be employed for the process of hydration. The water may be mixed with a glue or gum solution, calcium sulphate, or alkaline salts of boracic or other acid.

MEETINGS.

FRIDAY, MARCH 1.

Architectural Association.—Mr. E. W. M. Wonnacott on "The Paris Exhibition, 1900." 7.30 p.m.

Royal Institution.—Mr. H. H. Cunynghame, C.B., on "Enamels." 9 p.m.

Sanitary Institute (*Lectures for Sanitary Officers*).—Dr. H. R. Kenwood on "Water: Composition, Pollution, and Purification." 8 p.m.

Institution of Junior Engineers (*Westminster Palace Hotel*).—Paper on "Carburetted Water Gas," by Mr. Samuel Cutler, Jun. 8 p.m.

SATURDAY, MARCH 2.

Royal Institution.—The Right Hon. Lord Rayleigh, M.A., on "Sound and Vibrations." II. 3 p.m.

British Institute of Certified Carpenters (*Carpenters' Hall, E.C.*).—Mr. W. H. Betambeau on "Wood Beams: their Properties and Design." Professor R. Elsey Smith, Vice-President, will take the chair. 6 p.m.

Sanitary Institute (*Demonstrations for Sanitary Officers*).—Inspection at Islington Disinfecting Station. 3 p.m.

Edinburgh Architectural Association.—Visit to Glasgow International Exhibition Buildings.

MONDAY, MARCH 4.

Society of Engineers.—Paper by Mr. G. J. G. Jenson, entitled "Notes on certain Details of Drainage Construction." 7.30 p.m.

Cold Storage and Ice Association (*Fishmongers' Hall*).—Mr. P. F. Kensett on "Practical Insulation." 7.30 p.m.

Sanitary Institute (*Lectures for Sanitary Officers*).—Dr. H. R. Kenwood on "Elementary Statistics." 8 p.m.

Liverpool Architectural Society.—Professor Beresford Pite on "The Architectural Treatment of Stonework."

Leeds and Yorkshire Architectural Society.—Mr. Geoffry Lucas on "Logical Building and its influence on Design." 6.30 p.m.

TUESDAY, MARCH 5.

Institution of Civil Engineers.—Messrs. W. H. Stanger and Bertram Blount on "The Rotatory Process of Cement Manufacture." 8 p.m.

Society of Arts (*Applied Art Section*).—Mr. Richard Steele on "Early Playing Cards and their Decoration." 8 p.m.

Sanitary Institute (*Lectures for Sanitary Officers*).—Mr. J. Wright Clarke on "Details of Plumbers' Work." 8 p.m.

WEDNESDAY, MARCH 6.

Royal Archæological Institute of Great Britain and Ireland.—Mr. C. E. Keyser, M.A., F.S.A., on "Tympana of the Norman Doorways in our English Churches." Lantern Slides. 4 p.m.

British Archæological Association.—Rev. H. J. D. Astley, M.A., on "A Ramble Round Thetford." 8 p.m.

Builders' Foremen and Clerks of Works' Institution.—Ordinary meeting of the members. 8 p.m.

Sanitary Institute (*Demonstrations for Sanitary Officers*).—Inspection at Soap Works. 3 p.m.

THURSDAY, MARCH 7.

Royal Institution.—Professor Percy Gardner, F.S.A., on "Greek and Roman Portrait Sculpture." II. 3 p.m.

Carpenters' Hall, London Wall.—Mr. John Slater, B.A (Lond.) on "Celebrated Ancient Buildings." 8 p.m.

Society for the Encouragement of the Fine Arts.—Mr. C. E. Keyser, F.S.A. on "Sculptured Tympana of Norman Doorways." With limelight illustrations. 8 p.m.

Institution of Junior Engineers.—Mr. A. H. Barker, B.A., on "Works Management." III. 8 p.m.

Civil and Mechanical Engineers' Society.—Mr. J. R. Bell on "Authoritative Rules for Unit-stresses in Railway Girders." 8 p.m.

Sanitary Institute (*Lectures for Sanitary Officers*).—Professor R. Elsey Smith on "Building Materials." 8 p.m.

Institution of Electrical Engineers (*at the Institution of Civil Engineers*).—Mr. M. O'Gorman on "Insulation of Cables." 8 p.m.

Institution of Electrical Engineers (*Dublin Branch*).—Visit to the Dublin United Tramway Company's Power Station at Ringsend. 3 p.m.

FRIDAY, MARCH 8.

Architectural Association.—Special general meeting to consider the Committee's scheme for the establishment of day classes. 7.30 p.m.

Royal Institution.—Mr. W. A. Shenstone, F.R.S., on "Vitrified Quartz." With experimental illustrations. 9 p.m.

Institution of Civil Engineers (*Students' Meeting*).—Mr. C. Johnston on "Sewage Treatment." 8 p.m.

Glasgow Architectural Craftsmen's Society.—Mr. J. Lochhead on "The Decay of Building Materials." 8 p.m.

Sanitary Institute (*Lectures for Sanitary Officers*).—Professor T. Roger Smith on "Sanitary Building Construction and Planning; Soil and Local Physical Conditions." 8 p.m.

SATURDAY, MARCH 9.

Royal Institution.—Right Hon. Lord Rayleigh, on "Sound and Vibration." III. 3 p.m.

Institution of Junior Engineers.—Visit to the Southall Station of the Brentford Gas Company to inspect the carburetted gas plant, inclined retorts, &c. 3 p.m.

Dundee Institute of Architecture.—Mr. C. G. Soutar on "Ecclesiastical Architecture in Fifeshire." With limelight illustrations. 7 p.m.

Edinburgh Architectural Association.—Visit to Archers' Hall and Craigmillar Park United Free Church.

Sanitary Institute (*Demonstrations for Sanitary Officers*).—Inspection at Beddington Sewage Farm. 3 p.m.

SOME RECENT SALES OF PROPERTY:

ESTATE EXCHANGE REPORT.

February 16.—By HAMPTON & SONS (at Wimbledon).

Wimbledon.—Burghley-rd., thirteen building sites, f.	£4,262
Marryat-rd., five building sites, f.	1,256
Marryat-rd., three corner building sites, f.	1,563

February 18.—By DEVERELL & HILL.

Kingsland.—113 and 115, Hertford-rd., u.t. 49½ yrs., g.r. 30*l.*, r. 74*l.*	525

By WOODS & SNELLING.

Battersea.—Carpenter-st., f.g.r.'s 40*l.*, reversion in 80 yrs.	885
Hoxton.—10, Dorchester-st., u.t. 13½ yrs., g.r. 15*l.*	110

By ALFRED RICHARDS (at Tottenham).

Tottenham.—27 to 35 (odd), Birkbeck-rd., f., r. 156*l.*	1,540
Edmonton.—20 and 22, Church-st., f., r. 65*l.*	1,150

February 19.—By HAMPTON & SONS.

Hyde Park.—6, Stanhope-st. and 7, Sussex-mews West, u.t. 34 yrs., g.r. 31*l.* 10s.	1,640
Bayswater.—1, Kildare-gardens, u.t. 50 yrs., g.r. 9*l.*, e.r. 80*l.*	620
Harrow-on-the-Hill.—The Park, Parkfield, and 4 a., f.	6,000
Westcliff-on-Sea, Essex.—Hamlet Court-rd., Ferncote, beneficial lease for 9¾ yrs., r. 60*l.*	400

By PERCIVAL HODSON.

Wandsworth.—14, Malva-rd., u.t. 62 yrs., g.r. 3*l.*, r. 32*l.*	340
34, St. Anne's Hill, u.t. 62 yrs., g.r. 3*l.* 4s.	400
6 to 16 (even), Warple-rd., u.t. 65 yrs., g.r. 15*l.*	855
7 to 10, Elizabeth-pl., f.	1,010

By NOTLEY & CO.

Whitechapel.—Great Prescott-st., f.g.r. 45*l.*, reversion in 31 yrs.	1,200

By Messrs. TROLLOPE.

South Kensington.—2, Lenthall-mews, u.t. 61 yrs., g.r. 20*l.*	430

By WESTON & SONS.

Brixton.—81 and 83, Loughborough-rd., u.t. 22 yrs., g.r. 4*l.*, r. 78*l.*	510
Kennington.—109 to 133 (odd), Warham-st., f.	3,510
99 to 105 (odd), St. Mark's-rd., f.	1,720
98 to 126 (even), Farmer's-rd., f.	5,810
Brixton.—38, Angell-rd., u.t. 56½ yrs., g.r. nil, r. 45*l.*	540
Herne Hill.—270 and 272, Milkwood-rd., u.t. 65 yrs., g.r. 9*l.*, r. 54*l.*	560
Anerley.—Anerley Vale, f.g.r. 31*l.* 10s., reversion in 50 yrs.	870
Anerley Vale, i.g.r. 15*l.* 15s., u.t. 51 yrs., g.r. 4*l.*	225

By C. & H. WHITE.

Chelsea.—42, Shawfield-st., u.t. 51 yrs., g.r. 7*l.* 10s., r. 50*l.*	550
Brixton.—24, Trent-rd., u.t. 81 yrs., g.r. 9*l.*, r. 55*l.*	560
47, 49, and 51, Trent-rd., u.t. 81 yrs., g.r. 27*l.*, r. 138*l.*	1,320

By MATTHEW MILES (at Masons' Hall Tavern).

Kensington.—Charles-st., the Builder's Arms p.-h., u.t. 19½ yrs., r. 150*l.*, with goodwill	6,010

February 20.—By EDWIN W. HARRIS.

Penge.—2, 4, 6, and 8, Evelina-rd., u.t. 75 yrs., g.r. 20*l.*	555

By E. H. HENRY.

Balham.—55, High-rd., u.t. 78¼ yrs., g.r. 18*l.*, r. 175*l.*	2,500

By MARLER & MARLER.

Hyde Park.—5, Chester-pl., u.t. 32¾ yrs., g.r. 6*l.*, r. 200*l.*	2,075

By ORGILL, MARKS, & LAWRENCE.

Regent-st.—Beak-st., The Coffee House Tavern, a freehold rental of 80*l.*, reversion in 30 yrs.; also 54a, Marshall-st., adjoining, f.	4,600

By WHITE, BERRY, & TAYLOR.

Pimlico.—45, Cambridge-st., u.t. 26 yrs., g.r. 1s., r. 65*l.*	550
38, Cambridge-st., u.t. 37 yrs., g.r. 7*l.*, r. 65*l.*	580

By DOUGLAS YOUNG & CO.

South Lambeth.—28 and 29, Mawbey-st., u.t. 59½ yrs., g.r. 10*l.*	665
Brixton.—Nursery-rd., f.g.r. 15*l.*, reversion in 73 yrs.	390
Electric-lane, stabling and premises; also l.g.r.'s 38*l.*, u.t. 29 yrs., g.r. 30*l.*	550
East Ham.—1, Ranelagh-rd., u.t. 79½ yrs., g.r. 10*l.* 10s.	190
Ilford, Essex.—56, Mansfield-rd., u.t. 992 yrs., g.r. 7*l.* 3s., r. 38*l.*	365
Battersea.—61, Queen's-rd., u.t. 76 yrs., g.r. 9*l.* 0s., r. 50*l.*	525

February 21.—By G. F. BOX & CO.

Streatham.—30 Hopton-rd., u.t. 80 yrs., g.r. 9*l.*, e.r. 50*l.*	380

By G. PEARCE & SONS.

Hoxton.—72, New North-rd., u.t. 14½ yrs., g.r. 33*l.*, e.r. 85*l.*	£270
56 and 57, Shaftesbury-st., u.t. 59½ yrs., g.r. 32*l.*, r. 114*l.*	945
Islington.—6, Southgate-rd., u.t. 25½ yrs., g.r. 1*l.* 8s., r. 40*l.*	350
175, Southgate-rd., u.t. 30½ yrs., g.r. 5*l.*, r. 42*l.*	350
Lambeth.—22, 23, and 24, Doon-st., and 20, 21, and 21A, Bazon-st., u.t. 8 yrs, g.r. 13*l.* 10s.	500
38 and 39, Sutton-st., u.t. 12 yrs., g.r. 13*l.* 5s.	300

By WORSFOLD & HAYWARD.

Chelsea.—448, King's-rd., u.t. 50 yrs. g.r. 6*l.*, r. 40*l.*	500
40, Sydney-st., u.t. 25½ yrs., g.r. 6*l.*, r. 55*l.*	560

By NEWBON, EDWARDS, & SHEPHARD.

Marylebone.—36, Thayer-st., u.t. 6¼ yrs., g.r. 70*l.*, r. 110*l.*	125
Kingsland.—1 to 19 (odd), Abbott-st., f.	2,500
Islington.—115, Essex-rd., u.t. 10 yrs., g.r. 10*l.*, r. 36*l.*	125
Highbury.—127, Highbury New Park, u.t. 50 yrs, g.r. 10*l.* 4s., e.r. 90*l.*	835
Holloway.—483, Holloway-rd., f., e.r. 45*l.*	875
Wealdstone, Middlesex.—Rosslyn-cres., f.g.r.'s 24*l.*, reversion in 98½ yrs.	550

By STIMSON & SONS.

Finsbury.—14, 15, and 16, Whitecross-pl., f.	1,300
Brixton.—42 and 44, Mordaunt-st., u.t. 64½ yrs., g.r. 10*l.*	570
Ball's Pond.—2 to 20 (even), B shop's-grove, u.t. 61½ yrs., g.r. 42*l.*	2,255
Lambeth.—151, Lambeth-walk, u.t. 9 yrs., g.r. 10*l.* 10s., r. 70*l.*	285
36, Albert Embankment, u.t. 44 yrs., g.r. 25*l.*, r. 175*l.*	1,610
18, Johanna-st., u.t. 19½ yrs., g.r. 3*l.* 13s. 6d.	150
Kennington.—353, Kennington-rd., u.t. 60½ yrs., g.r. 8*l.* to 1926 and 10*l.* thereafter, e.r. 50*l.*	400

By BELTON & SONS (at Horse Shoe Hotel).

Stoke Newington.—High st., the Victoria p.-h., with goodwill; also 2, 4, 6, and 8, Victoria-grove, f.	24,000
Southwark.—Borough High-st., the Tabard p.-h., u.t. 28½ yrs., r. 120*l.*	4,500

By HOOKER & WEBB (at Croydon).

Whyteleafe, Surrey.—1 to 12, Welcome-ter., f.	2,525

By G. A. MCDOWELL (at Stratford).

Victoria Docks.—9, 11, and 13, Wightman-st., f.	715
Plaistow.—458 to 462 (even), Barking-rd., f.	1,500

February 22.—By HORNE & CO.

Holborn-circus.—15 to 20, Ely-pl.; 1 to 13, Ely-mews; and 1 to 16, Ely-buildings, area 14,918 ft., f., r. 1,069*l.* 13s.	36,500

Contractions used in these lists.—F.g.r. for freehold ground-rent; l.g.r. for leasehold ground-rent; i.g.r. for improved ground-rent; g.r. for ground-rent; r. for rent; f. for freehold; c. for copyhold; l. for leasehold; e.r. for estimated rental; u.t. for unexpired term; p.a. for per annum; yrs. for years; st. for street; rd. for road; sq. for square; pl. for place; ter. for terrace; cres. for crescent; yd. for yard.

PRICES CURRENT OF MATERIALS.

*** Our aim in this list is to give, as far as possible, the *average* prices of materials, not necessarily the lowest. Quality and quantity obviously affect prices—a fact which should be remembered by those who make use of this information.

BRICKS, &c.

	£	s	d.		
Hard Stocks	1	15	0	per 1,000	alongside, in river.
Rough Stocks and Grizzles	1	12	0	"	" "
Smooth Bright Facing Stocks	2	18	0	"	" "
Shippers	2	8	0	"	" "
Flettons	1	9	0	"	" "
Red Wire Cuts	1	15	6	"	" "
Best Fareham Red	3	11	6	"	" "
Best Red pressed Ruabon Facing	5	5	0	"	" "
Best Blue Pressed Staffordshire	4	7	0	"	" "
Do., Bullnose	4	12	0	"	" "
Best Stourbridge Fire Bricks	4	4	6	"	" "

GLAZED BRICKS.

Best White and Ivory Glazed Stretchers	13	0	0	"	" "
Headers	12	0	0	"	" "
Quoins, Bullnose, and Flats	17	0	0	"	" "
Double Stretchers	19	0	0	"	" "
Double Headers	16	0	0	"	" "
One Side and two Ends	19	0	0	"	" "
Two Sides and one End	20	0	0	"	" "
Splays, Chamfered, Squints	20	0	0	"	" "
Best Dipped Salt Glazed Stretchers and Headers	12	0	0	"	" "
Quoins, Bullnose, and Flats	14	0	0	"	" "
Double Stretchers	15	0	0	"	" "
Double Headers	14	0	0	"	" "
One Side and two Ends	15	0	0	"	" "
Two Sides and one End	15	0	0	"	" "
plays, Chamfered, Squints	14	0	0	"	" "
Seconds Quality White and Dipped Salt Glazed	2	0	0	"	less than best

	£	s.	d.		
Thames and Pit Sand		7	6	per yard, delivered.	
Thames Ballast		6	3	"	"
Best Portland Cement		38	0	per ton	
Best Ground Blue Lias Lime		25	6	"	"

NOTE.—The cement and lime is exclusive of the ordinary charge for sacks.

Grey Stone Lime ..... 23s. 6d. per yard, delivered.
Stourbridge Fire-clay in sacks, 22s. 6d. per ton at rly. dpt.

[*See also page 225.*

COMPETITIONS, CONTRACTS, AND PUBLIC APPOINTMENTS.

(For some Contracts, &c., still open, but not included in this List, see previous issues.)

COMPETITIONS.

Nature of Work.	By whom Advertised.	Premiums.	Designs to be delivered
*Public Library	Keighley Corporation	50*l.*, 30*l.* and 20*l.*	April 30

CONTRACTS.

Nature of Work or Materials.	By whom Required.	Forms of Tender, &c., Supplied by	Tenders to be delivered
Dynamo House, &c., at Workhouse	Barnsley Guardians	H. Crawshaw, Architect, 13, Regent-street, Barnsley	Mar. 5
Two Villas, Bawtry, Yorks	Mr. J. Howard	Brooks & Kelly, West View, Pontefract	do.
Chapel, near Beverley, Yorks	.....	J. C. Petch, Architect, Bank Chambers, Scarborough	do.
Workshops, Ruchill Park	Glasgow Corporation	A. B. M'Donald, Engineer, Office of Works, Glasgow	do.
Banking Premises, Thorpe Buildings	Halifax Commercial Banking Co	T. C. Hope & Son, Architects, 23, Bank-street, Bradford	do.
Electricity Station, Valley-road	Bradford Corporation	T. Stevens, Town Hall, Bradford	do.
Additions to Workhouse	Welwyn (Herts) Guardians	T. J. Sworder, Union Offices, Welwyn	do.
Two Cottages and Stores, Worsley, &c.	Manchester Corporation	Secretary, Waterworks Office, Town Hall, Manchester	do.
Passenger Station, &c., Littlemore, Oxon	Great Western Railway Company	G. K. Mills, Paddington Station, W.	do.
Sliphouse and Workshops, Stoke-on-Trent	Messrs. W. Kirkham & Sons	Scrivener & Sons, Architects, Hanley	do.
Street Works, near Railway Station	Mountain Ash (Glam.) U.D.C.	J. Williams, Surveyor, Town Hall, Mountain Ash	do.
Chimney Shaft, West Strand	Whitehaven Corporation	Borough Engineer, Town Hall, Whitehaven	do.
Cast-iron Pipes	Amble U.D.C.	W. Gibson, Surveyor, 31, Queen-street, Amble	do.
Ragstone	Handsworth (Staffs) U.D.C.	H. Richardson, Civil Engineer, Council House, Handsworth	do.
*Making-up Crabtree-lane	Fulham Borough Council	Surveyor, Town Hall, Walham Green, S.W.	Mar. 6
Cottage at Reservoir, Gammaton	Bideford Town Council	W. B. Seldon, Town Hall, Bideford	do.
Fourteen Cottages, Howth	North Dublin R.D.C	J. O'Neill, North Brunswick-street, Dublin	do.
Kerbs, Flags, Setts, &c	Heaton Norris U.D.C.	J. G. Banks, Council Offices, Heaton Moor	do.
Surveyor's Materials	Oldham Corporation	S. A. Pickering, Civil Engineer, Town Hall, Oldham	do.
Derbyshire Lime (450 tons)	Colchester Corporation	H. Goodyear, Civil Engineer, Borough Engineer, Colchester	do.
York Kerbs and Flags, Granite, &c	do.	do.	do.
Paving Works, Ormskirk	West Lancashire R.D.C.	C. Law-Green, Civil Engineer, Union Offices, Wigan-rd., Ormskirk	do.
Residence, Otley, Yorks	.....	Barber, Hopkinson & Co., Architects, Keighley	do.
Street Works, Leopold-road, &c	Felixstowe U.D.C.	G. S. Horton, Surveyor, Town Hall, Felixstowe	do.
Additions to Workhouse, Underwood	Plympton Guardians	F. A. Clark, Architect, Old Town-street, Plymouth	do.
Additions, &c., to Aberaman-Uchaf, Aberdare	Dr. Thos. Finney	J. L. Smith, Architect, Aberdare	Mar. 7
Six Houses, Berry Brow, Huddersfield	.....	J. Berry, Architect, 9, Queen-street, Huddersfield	do.
Nineteen Villas, Rhymney, Mon	Rhymney Building Company	J. L. Smith, Architect, 50, High-street, Merthyr Tydfil	do.
Lodge, &c., Brightside	Sheffield Corporation	C. F. Wike, Civil Engineer, Town Hall, Sheffield	do.
Brick Paving, &c., Esplanade Extension	Littlehampton U.D.C	H. Howard, Surveyor, Town Offices, Littlehampton	do.
Additions, &c., to Vron Schools, near Wrexham	Brymbo School Board	Davies & Moss, Architects, 2, Temple-row, Wrexham	do.
Business Premises, Eastbourne-avenue, Gateshead	.....	L. H. Armour, Architect, 16, West-street, Gateshead	do.
Two Streets, Lindley, Huddersfield	.....	J. Kirk & Sons, Architects, Huddersfield	do.
Clubroom, Illston-on-the-Hill, Leics	.....	H. Nourish, Illston-on-the-Hill, Billesdon, Leics	Mar. 8
Field Flints (9,710 yards)	High Wycombe R.D.C.	A. L. Grant, Surveyor, Crown-lane, High Wycombe	do.
Stores, Stabling, &c., Swindon	Dr. B. H. Dale	R. J. Beswick, Architect, 35, Regent-street, Swindon	do.
Sewerage Works	Ossett (Yorks) Corporation	W. Brook, Town Hall, Ossett	do.
Welsh Granite, &c.	Congleton (Cheshire) Town Council	R. Burslam, Borough Surveyor, Town Hall, Congleton	Mar. 9
Extension of Sewage Works, Halton	Hunslet R.D.C.	C. H. Marriott & Co., Civil Engineers, Dewsbury	do.
Laying-out Ground, Drainage, &c	Failsworth (Lancs) U.D.C.	C. J. Lomax, Civil Engineer, 37, Cross-street, Manchester	do.
Iron Bridge over Tavy, Horndon Clam	Tavistock R.D.C.	J. Northey, Surveyor, Lake Lifton	do.
New Road, Andover	.....	A. Herbert, Estate Agent, Andover	do.
Chapel, School, &c., Treorchy, Wales	.....	R. Morgan, 215, High-street, Treorchy	do.
School Buildings, Fishguard, Pembroke	Managers	G. Morris, High-street, Fishguard	do.
School, Kelvin-grove	Gateshead School Board	J. L. Nicholson, Archt., 55, Northumberland-st., Newcastle-on-T.	Mar. 11
School, Teams	do.	Thompson & Dunn, Architects, St. Nicholas'-buildings, Newcastle	do.
Water Supply Works, Aughrim	Rathdrum R.D.C.	B. Manning, Workhouse, Rathdrum	do.
Service Reservoirs, Water Mains, &c.	Bewdley Corporation	R. E. W. Berrington, Civil Engineer, Wolverhampton	do.
Quay Wall	Dungarvan (Ireland) U.D.C.	T. M'Carthy, Town Hall, Dungarvan	do.
Six Villas, &c., Elm-road, Leigh-on-Sea	.....	A. J. Martin, Architect, 11, Prittlewell-square, Southend	do.
Macadam, Setts, &c.	Garston U.D.C.	F. W. Bowden, Civil Engineer, Public Offices, Grassendale	do.
Technical Schools	Warminster (Wilts) U.D.C.	W. H. Hardick, Architect, Warminster	do.
Water Supply Works, Stopsley	Luton R.D.C.	B. B. Franklin, Surveyor, 21, Market-hill, Luton	do.
Sewage Works	Worsley (Lancs) U.D.C.	J. T. Proffitt, C.E., District Offices, Walkden, near Manchester	do.
*Council Chamber, &c.	Beckenham U.D.C.	Council Offices, Beckenham, Kent	do.
*Superstructure of Avonbank Electricity Works	Bristol Electrical Committee	Secretary, Electricity Department, Temple Back, Bristol	Mar. 12
*Widening of London-lane	Bromley U.D.C.	Surveyor, Council Offices, Bromley, Kent	do.
Road Stone	Bath U.S.A.	C. R. Fortune, City Surveyor, Bath	do.
Fifteen Cottages, Strabane, Ireland	.....	J. E. Sharkie, Council Offices, Strabane	do.
*Repairing, &c.	Metropolitan Police District	Police Surveyor, New Scotland Yard, S.W.	Mar. 14
*Sewers	Cromer U.D.C.	A. F. Scott, Surveyor, Church-street, Cromer	Mar. 15
Hotel, Llanbradach, Glam.	.....	Teather & Wilson, Architects, Queen-street, Cardiff	Mar. 16
*Army Medical Stores	L. & S. W. Railway Company	Superintendent, Docks Department, Southampton	Mar. 19
*School at Raynham-road	Edmonton School Board	See Advertisement	do.
*Engine House, &c.	Carlton U.D.C.	R. Whitbread, Surveyor, Carlton, near Nottingham	do.
*School	Metropolitan Asylums Board	C. & W. Henman, Architects, 64, Cannon-street, E.C.	Mar. 20
*Granite, Paving, &c.	Fulham Borough Council	Town Hall, Walham Green	do.
*Enlargement of Post Office	Office of Works	Postmaster, Bolton	Mar. 22
*School	Norton School Board	J. Norton, Architect, Alliance-chambers, George-street, Sheffield	Mar. 25
*Sewers, &c.	Daventry R.D.C.	J. B. Williams, Engineer, Moot Hall, Daventry	Mar. 26
*Heating	Warrington Corporation	Cackett & Burns Dick, Archt., 24, Grainger-st., W., Newcastle-on-T.	No date
Two-kiln Oast & Buildings, Harbledown, Canterbury	.....	W. J. Jennings, Architect, 4, St. Margaret's-street, Canterbury	do.
Three Cottages, Park-lane, Keighley	Townsend & Longbottom	J. Haggas & Sons, Architects, North-street, Keighley	do.
Licensed Premises, Black Swan, Leeds	.....	T. Winn & Sons, Architects, 92, Albion-street, Leeds	do.
Alterations to Masons' Arms, St. James-street, Leeds	.....	G. F. Bowman, Architect, 5, Greek-street, Leeds	do.
Alterations to Benaiah Chapel, Talybont-on-Usk	.....	Mr. Yorath, Maesmawr, Talybont	do.
Six Houses, Harsnett-road, Colchester	.....	J. W. Start, Surveyor, Colchester	do.
Club Premises, off Mottram-road, Stalybridge	.....	J. Eaton & Co., Architects, Ashton-under-Lyne	do.
Hotel, Front-street, Stanley, Durham	Mr. A. H. Higginbottom	T. E. Crossling, Architect, Stanley, Durham	do.
Warehouses, Old-street, E.C.	.....	A. Gordon, Architect, 107, Queen Victoria-street, E.C.	do.
Surveyor's Materials	Salford Corporation	Borough Engineer, Town Hall, Salford	do.
Extension of Jurd's Wharf, Southampton	.....	E. Cooper Poole, 4, Portland-street, Southampton	do.
Additions to St. James' School, Waterfoot, Lancs	.....	Rev. J. T. Munn, Vickerage, Waterfoot	do.

PUBLIC APPOINTMENTS.

Nature of Appointment.	By whom Advertised.	Salary.	Application to be in
*Road Surveyor	Birmingham Corporation	180*l.* per annum	Mar. 9
*Junior Draughtsman	Metropolitan Asylums Board	2*l.* per week	Mar. 12
*Building Inspector	Tottenham U.D.C.	150*l.* per annum	Mar. 19

Those marked with an asterisk (*) are advertised in this Number. *Competitions, p.* iv. *Contracts, pp.* iv. vi. viii. x. & xxiv. *Public Appointments, pp.* xxi. & xxiv.

PRICES CURRENT (*Continued*).

STONE.

	s.	d.			
Ancaster in blocks	2	0	per ft. cube, deld. rly. depôt.		
Bath ,, ...	1	7	,,	,,	
Farleigh Down Bath ..	1	8	,,	,,	
Beer in blocks	1	6½	,,	,,	
Grinshill ,, ...	1	10	,,	,,	
Brown Portland in blocks	2	2	,,	,,	
Darley Dale in blocks..	2	1½	,,	,,	
Red Corsehill ,,	2	5	,,	,,	
Red Mansfield ,,	2	4½	,,	,,	
Hard York in blocks ..	2	10	,,	,,	
Hard York 6 in. sawn both sides landings, to sizes (under 40 ft. sup.)	2	8	per ft. super. at rly. depôt.		
,, ,, 6 in. Rubbed Ditto..	3	0	,,	,,	
,, ,, 3 in. sawn both sides slabs (random sizes)	1	3	,,	,,	
,, ,, 3 in. self-faced Ditto	0	9½	,,	,,	

SLATES.

in. in.	£	s.	d.	
20×10 best blue Bangor ..	11	5	0	per 1000 of 1200 at rly. dep.
,, best seconds ,,	10	15	0	,, ,,
16× 8 best ,,	6	2	6	,, ,,
20×10 best blue Portmadoc	10	18	0	,, ,,
16× 8 best blue Portmadoc	6	0	0	,, ,,
20×10 best Eureka unfading green.....	11	2	6	,, ,,
16× 8 ,, ,,	6	15	0	,, ,,
20×10 Permanent green	10	0	0	,, ,,
16× 8 ,, ,,	5	12	6	,, ,,

TILES.

	s.	d.	
Best plain red roofing tiles...	41	6	per 1,000 at rly. depôt.
Hip and valley tiles....	3	7	per doz. ,, ,,
Best Broseley tiles	48	6	per 1,000 ,, ,,
Hip and valley tiles....	4	0	per doz. ,, ,,
Best Ruabon Red, brown or brindled Do. (Edwards)	57	6	per 1,000 ,, ,,
Do. ornamental Do.	60	0	,, ,, ,,
Hip tiles.....	4	0	per doz. ,, ,,
Valley tiles.....	3	9	,, ,, ,,
Best Red or Mottled Staffordshire Do. (Peakes) .	50	9	per 1,000 ,, ,,
Hip tiles	4	1	per doz. ,, ,,
Valley tiles.....	3	8	,, ,, ,,

WOOD.

BUILDING WOOD.—YELLOW.

	At per standard. £	s.	d.	£	s.	d.
Deals: best 3 in. by 11 in. and 4 in. by 9in. and 11 in.	16	10	0	18	0	0
Deals: best 3 by 9	14	10	0	15	10	0
Battens: best 2½ in. by 7 in. and 8 in. and 3 in. by 7 in. and 8 in.....	12	10	0	13	10	0
Battens: best 2½ by 6 and 3 by 6 ..	0	10	0	less than 7 in. and 8 in.		
Deals: seconds	1	0	0	less than best		
Battens: seconds.....	0	10	0	,, ,, ,,		
Fir timber: Best middling Danzig or Memel (average specification)	At per load of 50 ft. 4	10	0	5	0	0
Seconds	4	5	0	4	10	0
Small timber (8 in. to 10 in.)	3	12	6	3	15	0
Swedish balks.....	2	15	0	3	0	0
Pitch pine timber (35 ft. average)..	4	0	0	4	10	0

JOINERS' WOOD.

	At per standard. £	s.	d.	£	s.	d.
White Sea: First yellow deals, 3 in. by 11 in.....	27	10	0	28	10	0
3 in. by 9 in.	24	0	0	25	0	0
Battens, 2½ in. and 3 in. by 7 in.	20	0	0	21	0	0
Second yellow deals, 3 in. by 11 in.	22	10	0	24	0	0
,, ,, 3 in. by 9 in.	20	0	0	21	0	0
Battens, 2½ in. and 3 in. by 7 in.	16	10	0	18	0	0
Third yellow deals, 3 in. by 11 in. and 9 in.	16	10	0	18	0	0
Battens, 2½ in. and 3 in. by 7 in.	13	10	0	14	10	0
Petersburg: first yellow deals, 3 in. by 11 in.	25	0	0	26	0	0
Do. 3 in. by 9 in.	22	0	0	23	0	0
Battens.....	16	10	0	17	10	0
Second yellow deals, 3 in. by 11 in.....	18	10	0	20	0	0
Do. 3 in. by 9 in.	17	0	0	18	0	0
Battens.....	14	0	0	14	10	0
Third yellow deals, 3 in. by 11 in.....	15	0	0	16	10	0
Do. 3 in. by 9 in.	14	0	0	14	10	0
Battens.....	12	10	0	13	10	0
White Sea and Petersburg:—						
First white deals, 3 in. by 11 in..	15	10	0	16	10	0
,, ,, ,, 3 in. by 9 in. ..	14	0	0	15	0	0
Battens.....	12	10	0	13	10	0
Second white deals 3 in. by 11 in.	14	0	0	15	0	0
,, ,, ,, 3 in. by 9 in.	13	0	0	14	0	0
,, ,, battens	11	0	0	12	0	0
Pitch pine: deals.....	16	0	0	18	0	0
Under 2 in. thick extra	0	10	0	1	0	0
Yellow Pine—						
First, regular sizes	30	0	0	33	0	0
Broads (12 in. and up)	2	0	0	more.		
Oddments	22	0	0	24	0	0
Seconds, regular sizes	24	10	0	26	10	0
Yellow Pine Oddments	20	0	0	22	0	0
Kauri Pine—						
Planks, per ft. cube	0	3	6	0	4	6
Danzig and Stettin Oak Logs—						
Large, per ft. cube	0	2	6	0	2	8
Small ,, ,, ...	0	2	4	0	2	7
Wainscot Oak Logs, per ft. cube ..	0	5	0	0	5	6
Dry Wainscot Oak, per ft. sup. as inch	0	0	8	0	0	9
in. do. do.	0	0	7	-	-	-
Dry Mahogany—						
Honduras, Tabasco, per ft. sup. as inch	0	0	9	0	0	11
Selected, Figury, per ft. sup. as inch	0	1	6	0	2	0

PRICES CURRENT (*Continued*).

WOOD.

	At per standard. £	s.	d.	£	s.	d.
Dry Walnut, American, per ft. sup. as inch.....	0	0	10	0	1	0
Teak, per load	16	0	0	20	0	0
American Whitewood Planks—						
Per ft. cube.....	0	2	3	0	3	0

JOISTS, GIRDERS, &c.

	In London, or delivered to Railway Vans, per ton. £	s.	d.	£	s.	d.
Rolled Steel Joists, ordinary sections	8	0	0	9	0	0
Compound Girders ,, ,,	9	10	0	10	15	0
Angles, Tees and Channels, ordinary sections	9	12	6	11	12	6
Flitch Plates	10	0	0	10	15	0
Cast Iron Columns and Stanchions, including ordinary patterns	8	5	0	10	0	0

METALS.

	Per ton, in London. £	s.	d.	£	s.	d.
IRON.—						
Common Bars.....	9	10	0	-	-	-
Staffordshire Crown Bars, good merchant quality	9	15	0	10	0	0
Staffordshire "Marked Bars" ..	11	10	0	-	-	-
Mild Steel Bars.....	9	10	0	10	10	0
Hoop Iron, basis price.....	10	5	0	10	15	0
,, ,, galvanised	16	0	0	-	-	-
(* And upwards, according to size and gauge.)						
Sheet Iron, Black.—						
Ordinary sizes to 20 g.	10	15	0	-	-	-
,, ,, to 24 g.....	11	15	0	-	-	-
,, ,, to 26 g.....	13	5	0	-	-	-
Sheet Iron, Galvanised, flat, ordinary quality.—						
Ordinary sizes, 6 ft. by 2 ft. to 3 ft. to 20 g.....	13	0	0	-	-	-
,, ,, 22 g. and 24 g.	13	15	0	-	-	-
,, ,, 26 g.....	15	10	0	-	-	-
Sheet Iron, galvanised, flat, best quality.—						
Ordinary sizes to 20 g.	17	0	0	-	-	-
,, ,, 22 g. and 24 g.	17	10	0	-	-	-
,, ,, 26 g.....	19	0	0	-	-	-
Galvanised Corrugated Sheets.—						
Ordinary sizes, 6 ft. to 8 ft. 20 g.	13	0	0	-	-	-
,, ,, 22 g. and 24 g.	13	10	0	-	-	-
,, ,, 26 g.	14	0	0	1	10	0
Best Soft Steel Sheets, 6 ft. by 2 ft. to 3 ft. by 20 g. and thicker ..	13	0	0	-	-	-
,, ,, 22 g. and 24 g.	14	0	0	-	-	-
,, ,, 26 g.	15	0	0	-	-	-
Cut nails, 3 in. to 6 in.....	11	10	0	-	-	-
(Under 3 in. usual trade extras.)						
LEAD—Sheet, Englisb, 3 lbs. & up.	18	0	0	-	-	-
Pipe in coils	18	10	0	-	-	-
Soil Pipe..	21	0	0	-	-	-
ZINC—Sheet—						
Vieille Montagne ..... ton	6	0	0	-	-	-
Silesian.....	25	0	0			
COPPER—						
Strong Sheet..... per lb.	0	1	1	-	-	-
Thin ..... ,,	0	1	3	-	-	-
Copper nails ..... ,,	0	1	3	-	-	-
BRASS—						
Strong Sheet..... ,,	0	0	11	-	-	
Thin ,, ... ,,	0	1	1	-	-	
TIN—English Ingots ..... ,,	0	1	4½	-	-	
SOLDER—Plumbers' ..... ,,	0	0	8½	-	-	
Tinmen's ..... ,,	0	0	9	-	-	-
Blowpipe ..... ,,	0	0	10	-	-	-

ENGLISH SHEET GLASS IN CRATES.

15 oz. thirds	2¾d. per ft. delivered.
,, fourths	2¾d. ,, ,,
21 oz. thirds	3¼d. ,, ,,
,, ,, fourths.....	3¼d. ,, ,,
26 oz. thirds	4¼d. ,, ,,
,, ,, fourths	4¼d. ,, ,,
32 oz. thirds	5¼d. ,, ,,
,, ,, fourths.....	5¼d. ,, ,,
Fluted sheet, 15 oz.	3¼d. ,, ,,
,, ,, 21 ,, ...	4¼d. ,, ,,
½ Hartley's Rolled Plate.....	3d. ,, ,,
⅝ ,, ,, ,, ...	3½d. ,, ,,
½ ,, ,, ,, ...	4d. ,, ,,

OILS, &c.

	£	s.	d
Raw Linseed Oil in pipes.....per gallon	0	2	6
,, ,, ,, in barrels ..... ,,	0	2	5
,, ,, ,, in drums ..... ,,	0	2	8
Boiled ,, ,, in pipes..... ,,	0	2	8
,, ,, ,, in barrels ..... ,,	0	2	9
,, ,, ,, in drums ..... ,,	0	2	11
Turpentine, in barrels ..... ,,	0	2	7
,, in drums..... ,,	0	2	9
Genuine Ground English White Lead ...per ton	27	0	0
Red Lead, Dry..... ,,	25	10	0
Best Linseed Oil Putty.....per cwt.	0	9	0
Stockholm Tar ..... per barrel	1	10	0

VARNISHES, &c.

	per gallon £	s.	d
Fine Elastic Copal Varnish for outside work ..	0	16	6
Best Elastic Copal Varnish for outside work ..	1	0	0
Best Elastic Carriage Varnish for outside work	0	16	6
Best Hard Oak Varnish for inside work.....	0	10	6
Best Extra Hard Church Oak Varnish for inside work	0	10	6
Fine Hard Copal Varnish for inside work	0	16	0
Best Hard Copal Varnish for inside work	1	0	0
Best Hard Carriage Varnish for inside work....	0	16	0
Extra Pale Paper Varnish	0	12	0
Best Japan Gold Size	0	10	0
Best Black Japan	0	16	0
Oak and Mahogany Stain	0	9	0
Brunswick Black	0	9	0
Berlin Black	0	15	0
Knotting	0	10	0
Best French and Brush Polish	0	10	0

TO CORRESPONDENTS.

NOTE.—The responsibility of signed articles, letters, and papers read at meetings, rests, of course, with the authors.

We cannot undertake to return rejected communications.

Letters or communications (beyond mere news items) which have been duplicated for other journals are NOT DESIRED.

We are compelled to decline pointing out books and giving addresses.

Any commission to a contributor to write an article is given subject to the approval of the article, when written, by the Editor, who retains the right to reject it if unsatisfactory. The receipt by the author of a proof of an article in type does not necessarily imply its acceptance.

All communications regarding literary and artistic matters should be addressed to THE EDITOR; those relating to advertisements and other exclusively business matters should be addressed to THE PUBLISHER, and *not* to the Editor.

TENDERS.

[Communications for insertion under this heading should be addressed to "The Editor," and must reach us *not later than 10 a.m. on Thursdays.* N.B.—We cannot publish tenders unless authenticated either by the architect or the building-owner; and we cannot publish announcements of tenders accepted unless the amount of the tender is given, nor any list in which the lowest tender is under £100, unless in some exceptional cases and for special reasons.]

* Denotes *accepted.* † Denotes *provisionally accepted.*

BANBURY.—For the supply of Hartshill stone for one year, for the Town Council. Mr. N. H. Dawson, C.E., Town Hall, Banbury:—

Jee's Hartshill Granite and Brick Company, Limited, Hartshill, near Atherstone, 7s. 3d. (block stone per ton delivered at Banbury).

BELVEDERE (Kent).—For the erection of new board offices, cookery centre, drainage work and sundry additions to schools, for the Erith School Board. Messrs. Ford, Son, & Burrows, architects, 21, Aldermanbury, S.E. Quantities supplied:—

Woodward & Co. ..	£7,224	Miles	£6,549
Martin Wells & Co.	6,731	Proctor	6,335
Patman & Fotheringham.....	6,708	Thomas & Edge....	6,008
Jerrard & Son	6,675	Foster Bros.	6,057
Tonge.....	6,562	Enness Bros.*	5,567

BIRMINGHAM.—For making-up, &c., Livingstone-road, King's Heath, for the Urban District Council:—

Jacob Biggs..	£1,135 9 8	Abel Cooper....	£921 15 0
Fitzmaurice & Co.	1,023 0 0	John White Irwin	916 0 11
Carrall, Lewis, & Martin ..	937 9 10	Barnes & Co., Northfield* ..	858 0 0

CARDIFF.—For the erection of shops, &c., Queen-street. Messrs. Teather & Wilson, architects, Queen-street, Cardiff:—

J. E. Evans..	£4,100 0 0	F. Small	£3,680 0 0
Geo. Griffiths	4,007 10 0	W. T. Morgan	3,645 0 0
A. W. Cadwallader	3,910 13 7	Turner & Sons	3,598 0 0
J. H. Venning	3,850 0 0	Knox & Wells	3,590 0 0
Shepton & Son	3,741 10 0	Geo. Couzens	3,497 16 6
F. Couzens ..	3,725 0 0	Lattey & Co.	3,468 0 0
Chubb & Co.	3,690 0 0	W. H. Ingleson	3,448 0 0
A. J. Howell	3,680 0 0	James Allan..	3,250 0 0

[All of Cardiff]

CUPAR FIFE, N.B.—For the construction of a brick and concrete reservoir, Rires Hill. Mr. Henry Bruce, C.E., County Buildings, Cupar Fife:—

John Martin..	£1,258 13 5	W. Caregher ..	£966 3 4
White & Son..	1,120 14 5	Mackay & Son	933 6 0
Strachan & Son	1,025 8 8	J. & J. Farmer	£81 14 9
R. Skinner ..	1,025 7 11		

The site of the tank was shifted and the plans amended to save cost, and amended offers were invited from the two lowest offerers, with following result:—

Mackay & Son..	£852 8 9	J. & J. Farmer, Methi*	£770 1 4½

DUNOON.—For road-widening, &c., West Bay, Dunoon. Mr. Chas. J. M. Mackintosh, C.E., Burgh Engineer, Dunoon:—

Stark & Sons..	£1,789 9 6	Aitkenhead & Son	£1,276 3 6
A. King.....	1,653 14 4	Brebner & Co.	1,070 8 7
D. Watson....	1,638 13 2	Cunningham & Sons	1,016 15 6
H. McDougall	1,370 7 9	A. A. R. Lang, Gourock* ..	869 1 2
A. Duncan ..	1,347 1 0		
T. Scott.....	1,341 10 2		
W. Whitelaw	1,301 18 3		
C. Wilkie	1,301 2 2		

DUNOON, N.B.—For the erection of a steel girder bridge, Balgie Burn, West Bay, for the Commissioners. Mr. C. J. M. Mackintosh, C.E., Burgh Engineer, Dunoon. Quantities by engineer:—

W. O. Brettell ..	£788 5 0	Hanna, Donald & Wilson	£485 0 0
Ayr Structural and Stamping Co.	607 14 0	Smith & Co.	462 7 7
Cameron & Co.	492 0 0	Aitkenhead & Son	449 9 3
William Baird..	487 15 9	Somervail & Co., Dalmuir, N.B.*	420 10 6

LEEDS.—For the erection of St. Anne's Cathedral, Leeds. Mr. J. H. Eastwood, architect, Kensington, W. Quantities by Mr. G. Evans, 10, Duke-street, Adelphi:—

Gough	£44,934	Wilson	£38,779
Obank	44,721	Shillitoe	38,000
Thompson	41,884	Armitage & Hodgson	36,666
Myers	41,000	Wilcocks	[illegible]
Stephens & Bastow	40,980	Cowlin	34,597

[*See also next page.*

HENDON.—For fully making up Pattison-road and Church-terrace; surface water drainage, Church End, and Church-road; new road, The Hyde, &c., for the Urban District Council of Hendon. Parson-street, Mr. S. Slater Grimley, Engineer and Surveyor:—

	Pattison-road.	Church-terrace.	Surface Water D'ge. Parson-st., &c.	Finchley-road.	Victoria & Stratford-rd. Second Avenue.	The Hyde (new road).	Total.
	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.
F. H. Jackson	1,937 14 3	648 10 6	554 14 5	470 1 0	513 12 6	587 19 0	4,712 11 8
W. Griffiths	1,593 17 8	637 2 5	652 7 3	282 10 9	401 10 0	672 10 0	4,239 18 1
J. Meston	1,528 10 6	622 17 10	628 1 0	305 9 3	372 16 8	617 19 0	4,075 14 3
Myers, Gilson, & Rose	1,482 7 1	503 1 0	606 14 9	295 18 2	356 10 0	579 1 7	3,013 12 7
H. Boyer	1,290 0 0	589 0 0	627 0 0	335 0 0	417 0 0	549 0 0	3,807 0 0
T. Adams, Wood Green	1,299 3 5*	559 7 10	637 6 0	289 17 2*	361 18 4*	518 1 2	3,665 13 11
R. Ballard, Ltd., Child's Hill	1,330 8 6	544 8 6*	539 13 6*	303 12 6	367 5 0	491 12 0*	3,577 0 0
Wallace & Inns	—	—	—	—	396 10 0	—	396 10 0
Surveyor's estimate	1,365 16 4	572 4 10	586 17 4	290 12 7	528 13 6	500 0 0	3,844 4 7

LEEDS.—For the erection of Primitive Methodist church and school, Ladypit-lane, Beeston Hill. Mr. W. G. Smithson, architect, 13, Bond-street, Leeds. Quantities by architect:—

Bricklaying and Masonry.—Joseph Pullan, Beeston, Leeds	£1,395 0
Carpentry and Joinery.—Joseph Pullan, Beeston, Leeds	942 10
Plumbing.—J. W. Vine, Queen's-square, Leeds	206 10
Plastering.—J. H. Brook, Armley, Leeds	115 0
Slating.—J. Dickinson, Beeston Hill, Leeds	70 0
Iron and Steel Work.—Perkin & Co., Ltd., Leeds	134 0
Painting.—H. Lambert, Leeds	60 0
	£2,923

LONDON.—For the erection of children's home, Milman-street, S.W., for the Guardians of St. George. Mr. E. T. Hall, architect, 57, Moorgate-street, E.C. Quantities by Mr. T. M. Deacon:—

M. Pearson	£19,278	Leslie & Co.	£16,279
Sabey & Son	18,167	Messom & Sons	15,953
Shillitoe & Sons	17,100	Harris & Wardrop	15,597
R. L. Tonge	16,990	Braid, Pater, & Co.	15,200
Foster Bros.	16,969	Johnson & Sons	15,031
Perry Bros.	16,813	H. L. Holloway	14,979
Hibberd Bros.	16,710	Gough & Co.	14,454
J. Appleby	16,596	Kingerlee & Sons	13,967
W. S. Beaton	16,525	Foster & Dicksee, Rugby*	12,917
C. Gray Hill	16,400	W. Smith	12,708
W. J. Renshaw	16,392		
Marriage & Withrington	16,300		

LONDON.—For alterations to the Crown Tavern, York-road, N., to adapt it for cabinet works. Mr. Alex. G. Wordley, surveyor, 8, Duke-street, Adelphi, W.C.:—

Brown & Son	£825	Leath & Harris	£679
E. Bransgrove	685	J. D. Hobson*	668

LONDONDERRY.—For the erection of two villa residences, Northland-road. Mr. E. J. Toye, architect, Strand, Londonderry:—

Maultsaid & Pollock, Orchard-street, Derry* £1,650

SUTTON.—For the erection of a cottage hospital at Sutton, Surrey. Mr. Cecil A. Sharp, architect, 11, Old Queen-street, Queen Anne's-gate:—

Smith & Son	£2,510	J. Humphry	£2,270
Huntley Bros.	2,485	E. J. Burnand	2,132
F. J. Shopland	2,470	J. B. Potter, Sutton*	2,045

[Exclusive of additional items to be added at the option of the committee, which bring the amount of the lowest accepted tender to £2,500.]

WHITBY.—For the erection of electric light station and destructor, for the Urban District Council. Messrs. Preece & Cardew, engineers. Messrs. Hubbard & Moore, architects. Quantities by Mr. Alexander H. Kinder:—

F. G. Minter	£5,664 0 0	Parker & Sharp	£5,508 15 2
Jaram & Son	6,379 10 0	A. Palframan, Whitby*	4,648 14 0
J. F. Wilson	6,252 1 6		

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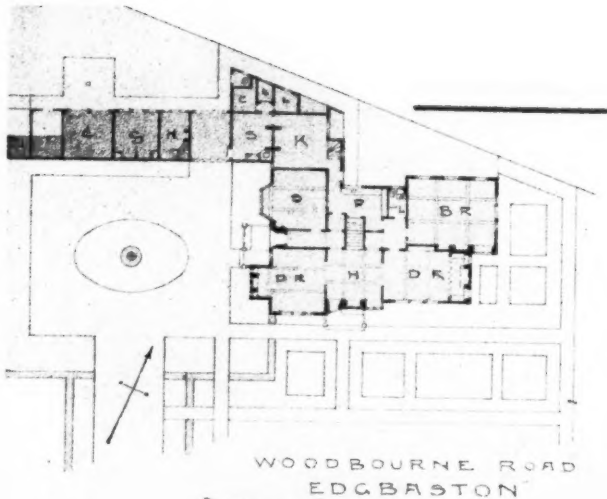

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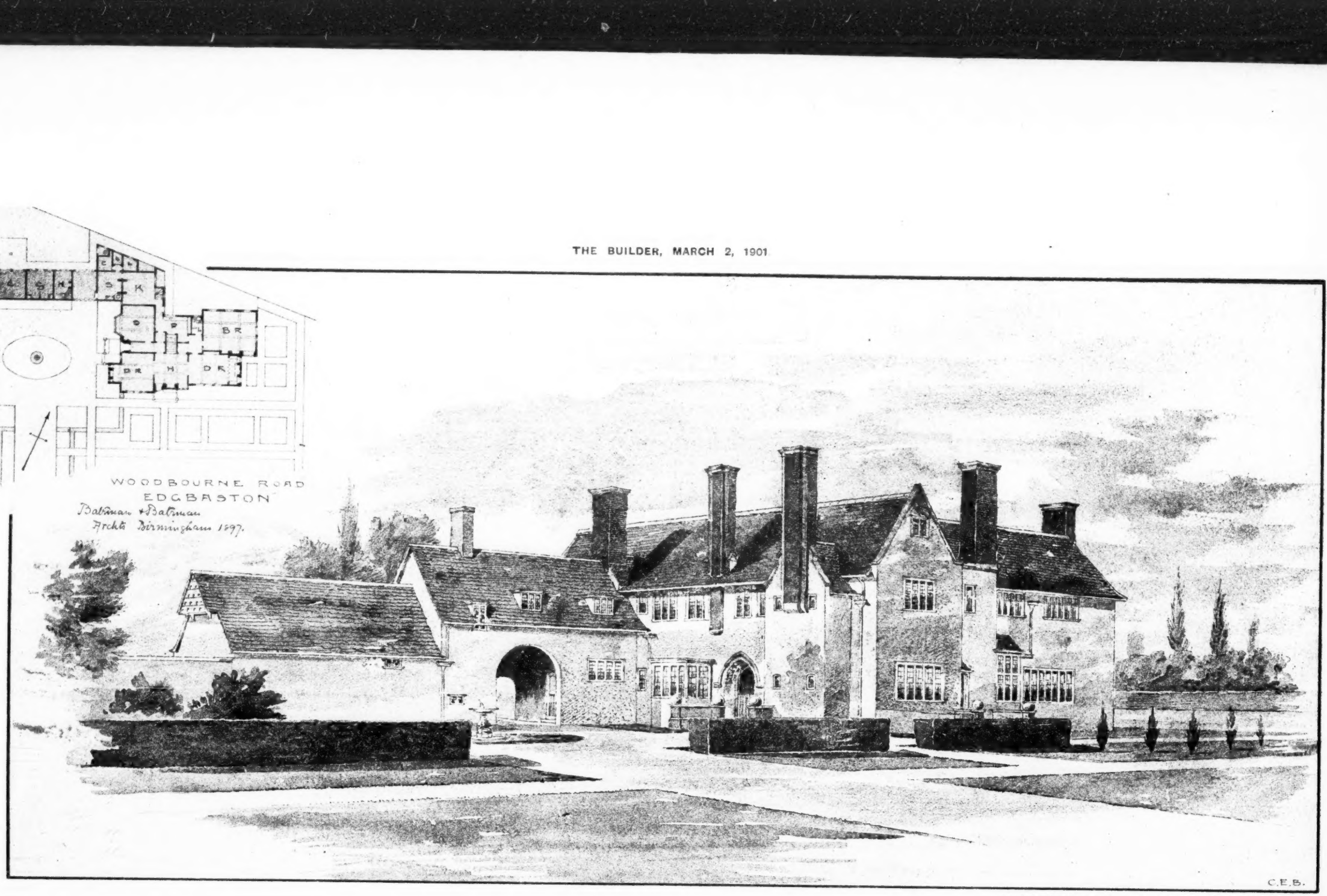

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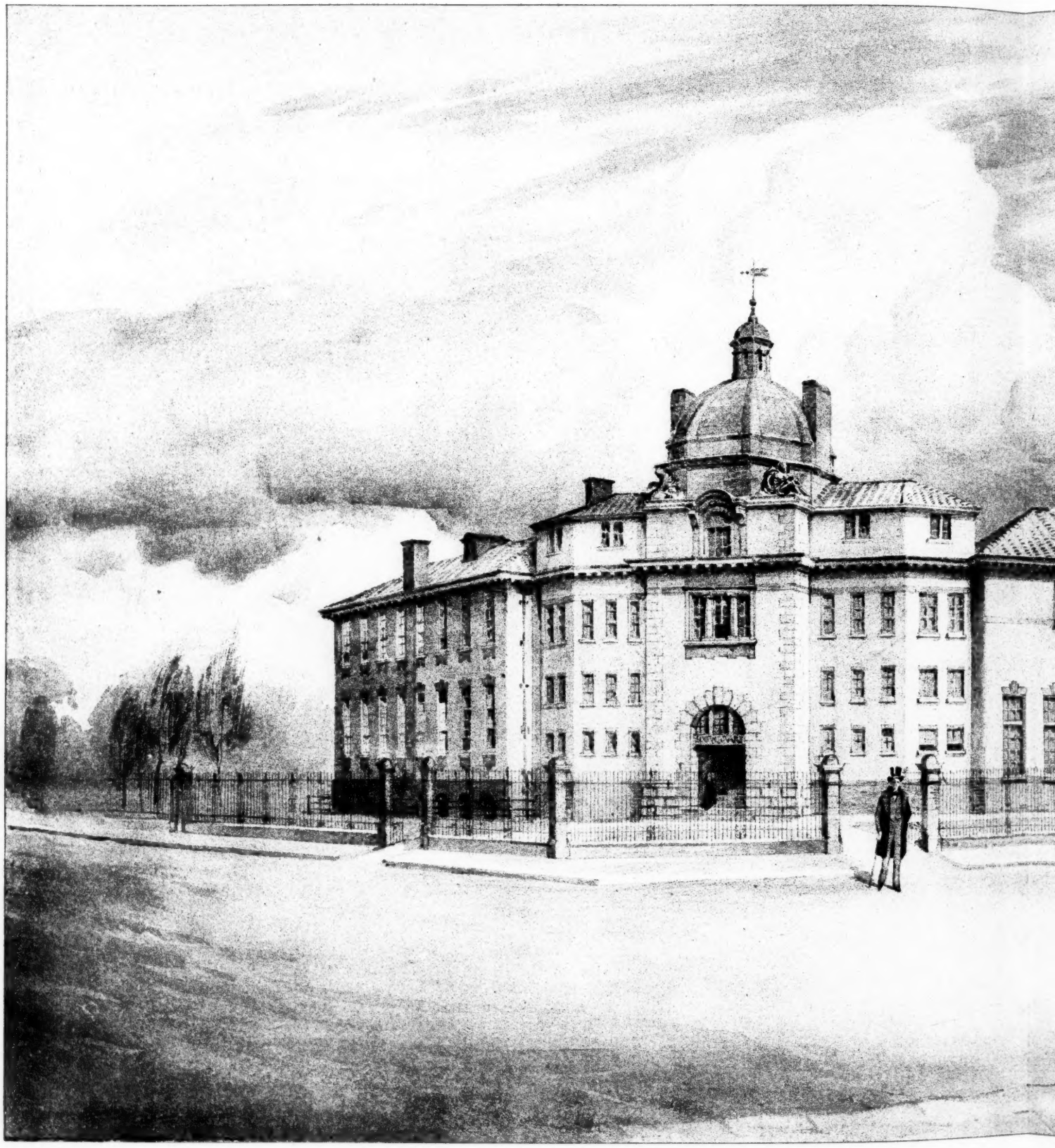

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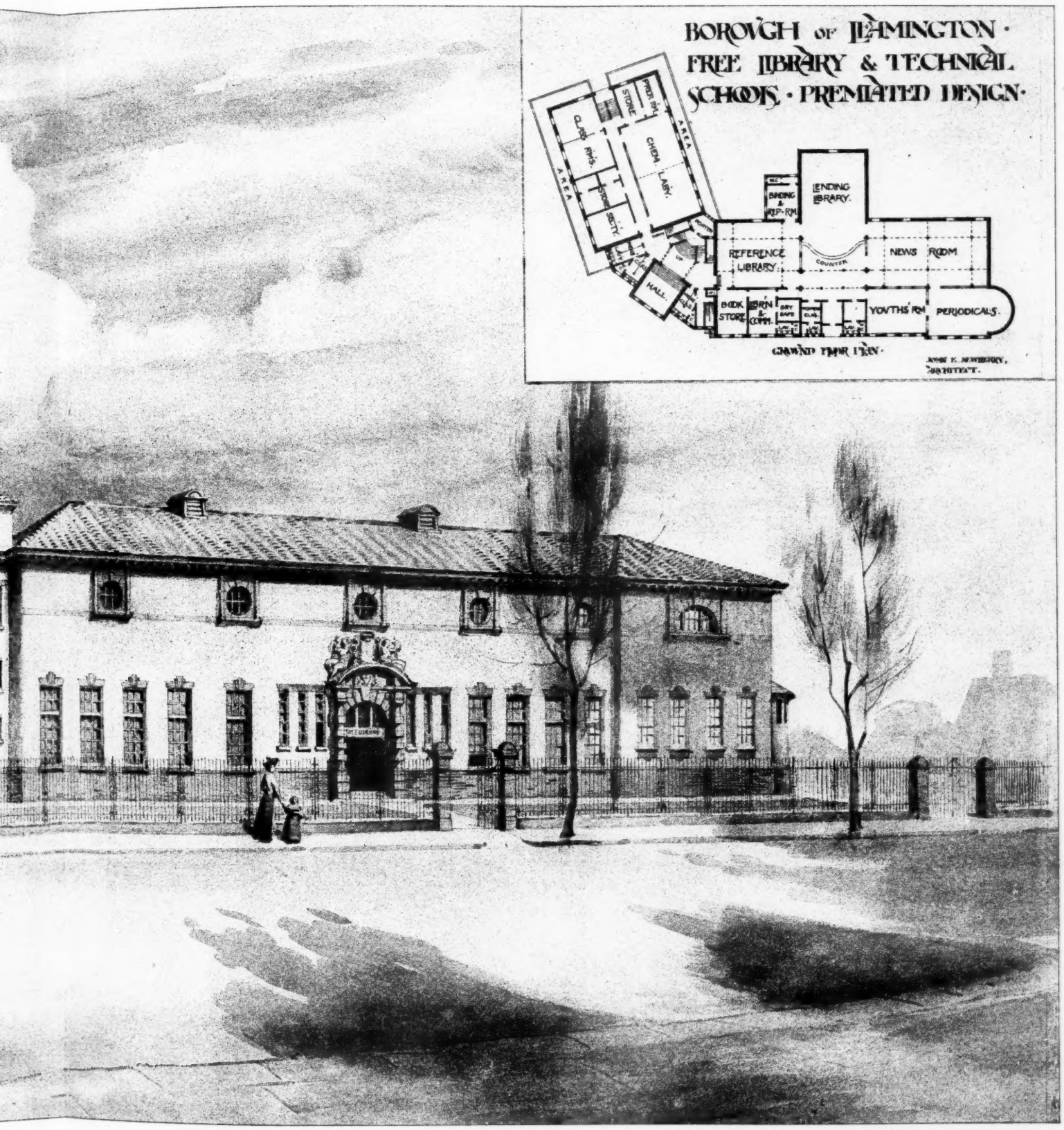

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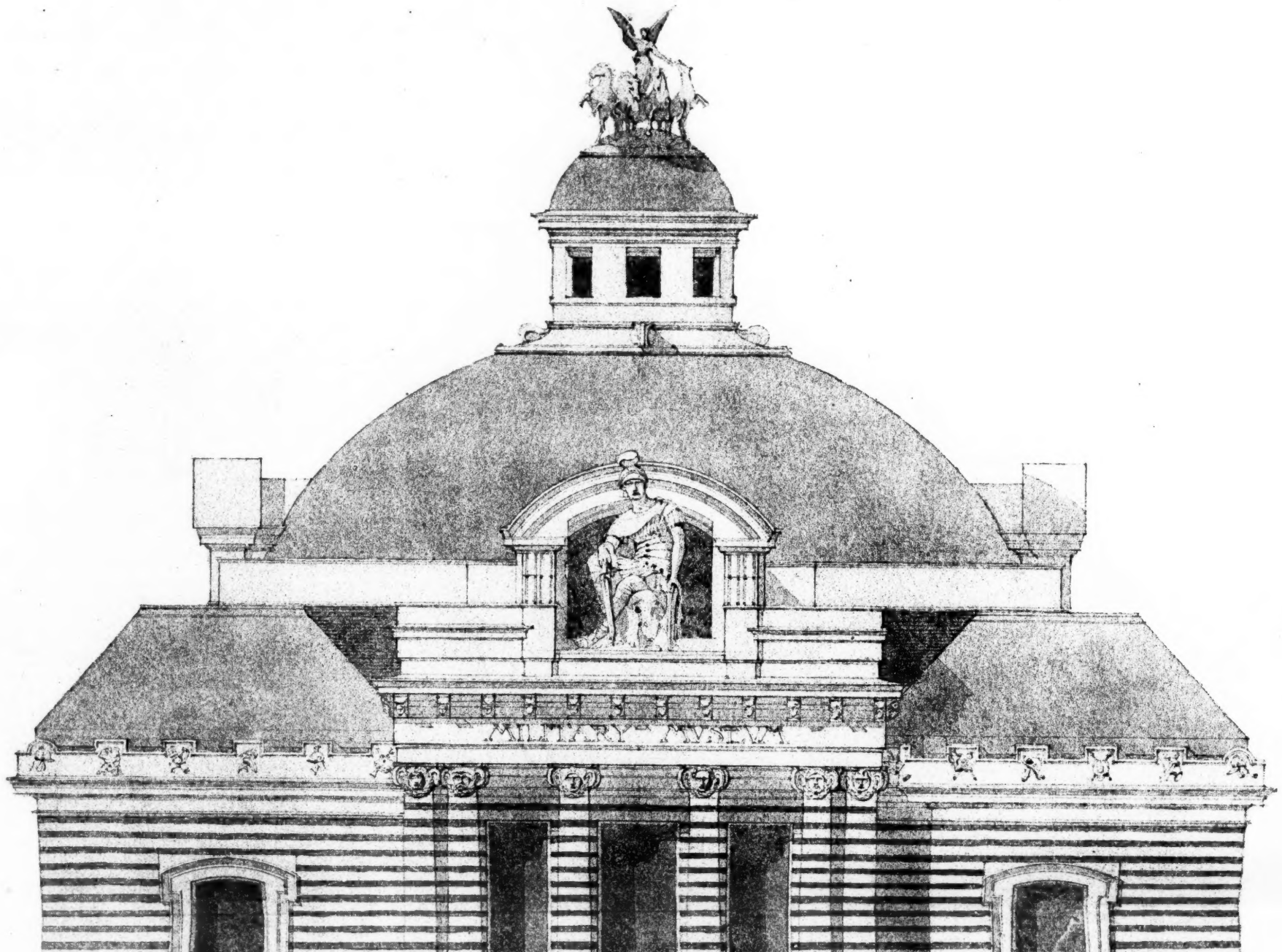
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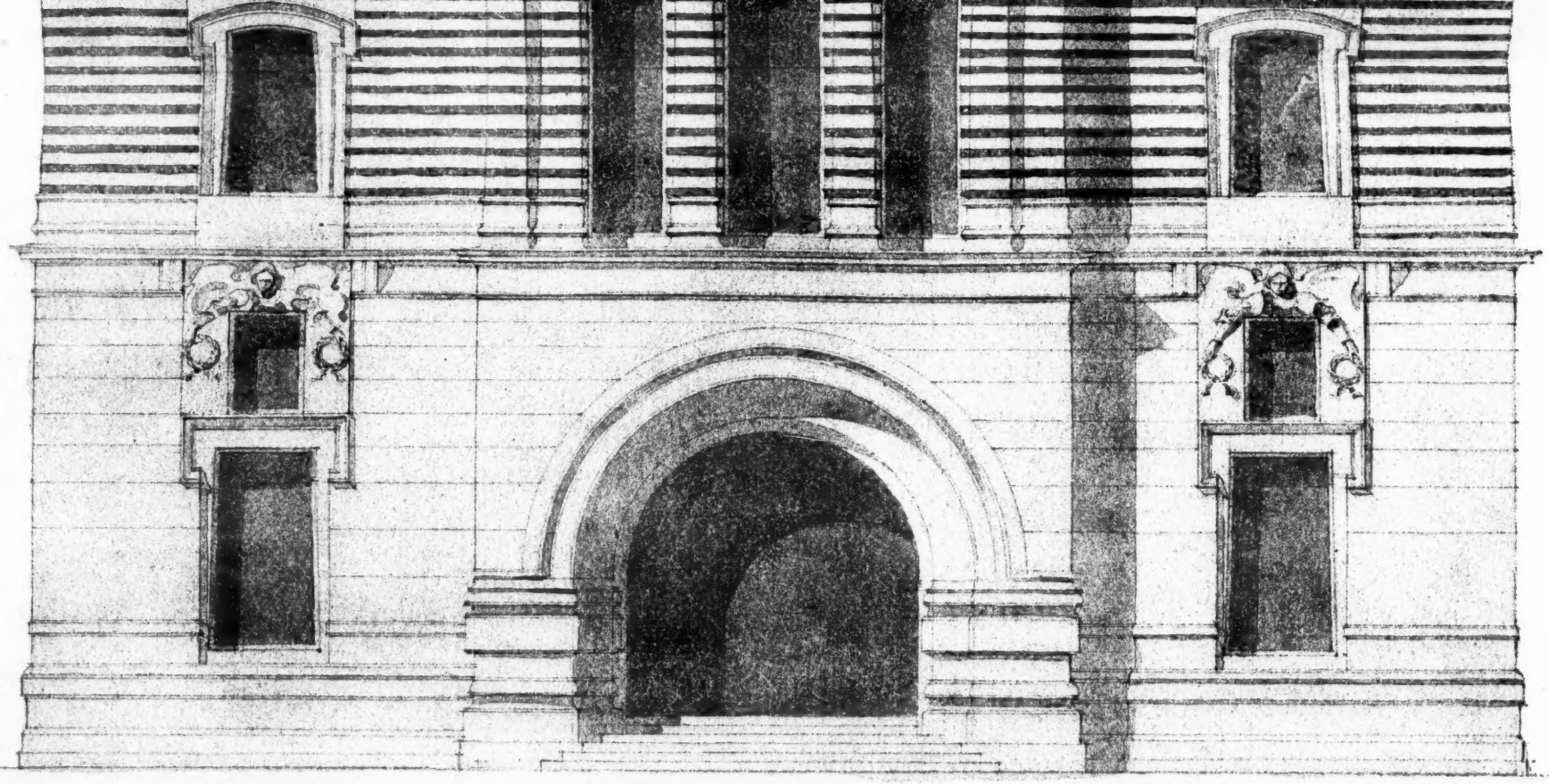

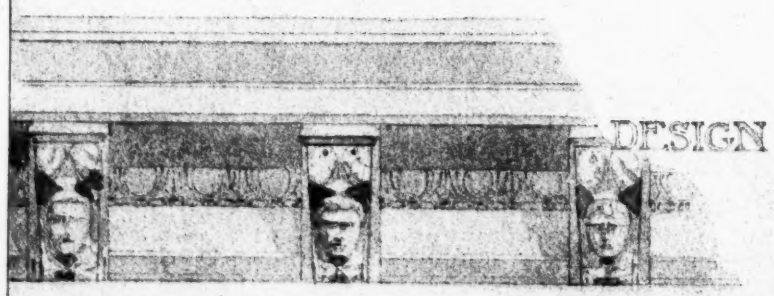

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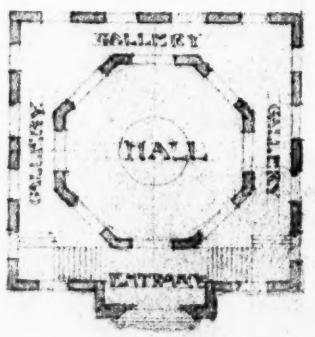

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